GENDER, PERCEIVED HEALTH STATUS, AND SOCIAL SUPPORT AMONGST OAHU'S HOMELESS

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Abstract

Homelessness has been increasing on Oahu for the past several years. The health status of the homeless, sheltered population is unexplored because of the challenges in gathering data about their situations. This exploratory research has detailed the sociodemographic profile of this group, exploring the impact of race/ethnicity, gender, class, age, parental status, length of homelessness (LOH), and social support on the perceived health status of the homeless, sheltered population on Oahu, Hawai`i. This research surveyed 151 participants living in four shelters: two in urban and two in rural settings. The research explored the perceived health status, availability of social support and length of homelessness (LOH), respectively, using the Center for Disease Control (CDC)'s Healthy Days Core Module (HDC), Interpersonal Support Evaluation List (ISEL), and Length of Homelessness survey (LOH). The three models, the general health, physical and mental health statuses were analyzed using bivariate analysis, ordinal logistic regression, and negative binomial regression models. The results suggest that Micronesians are more likely to have fewer physically and mentally sick days than their White counterparts within the homeless population. It appears that Micronesians migrating from collectivistic society share similar cultural values and burdens of homeless situations. In contrast, the White participants with individualistic values face the challenges alone. Sheltered women are more likely to have poorer mental health status than men. The physically sick days model indicated that social support had a negative, not positive, impact on a participant's health status. Implications for future research to focus on the type and frequency of social support resources that work well for Micronesians and explore the mechanism that will work well for the White participants.

Keywords: homelessness, perceived health status, social support, length of homelessness, sheltered residents, Hawai`i

Dedication

For my late Appa and Amma.

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Chapter 1. Introduction

The extent of homelessness in Hawai`i is evident on many fronts. Residents are dealing with campers in their neighborhoods. Park staffs are dealing with people living in tents, defecation, and other issues on public lands. County and state government officials are struggling to be responsive to Hawai`i housed residents, while, at the same time, grappling with possible solutions to an affordable-housing crisis. In the midst of all these interest groups, service providers are under strain as they strive to provide outreach and safe residential care to homeless adults and children.

A challenge for each of these concerned groups is that there is limited information about the homeless population, although it is known to be highly diverse. This study will focus on learning about some Oahu homeless people, specifically those that accepted offers of help, and sheltered for at least one night in an official shelter. The research presented will provide information about the health of Oahu homeless, and how this may be affected by individual characteristics, such as race/ethnicity, gender, SES (socioeconomic status), age, and participants with and without children, length of homelessness (LOH) and the role of social support. While social workers cannot alter the individual factors underlying a client's presentation for help, they can offer social support. This study suggests that for some clients, social support may not help in the way that social workers have assumed that it does. This finding is significant, and will be further discussed at the end of this work.

Before turning to the details of this study, and its importance, it is helpful to present some

background about the homeless problem in the United States, and the specific case of Hawai`i. This discussion then segues into noticeable gaps in the research literature, and how this study will contribute to narrowing a gap in understanding factors affecting the health of the temporarily sheltered homeless. This section of the work also provides a statement of the research problem, and information about the purpose, and significance of the study. Operational definitions are also covered briefly.

It is now relevant to turn to the topic of homelessness in the U.S. as a whole, before focusing on the state of Hawai`i. It should be recognized that this is a brief introduction to the issue, with more details appearing in the literature review.

Background of the Problem

Homelessness in the U. S.

It has been estimated that 2 to 3 million people in a given year experience an episode of homelessness in the United States. These homeless people received services from homeless service providers in shelters and outreach programs (Burt *et al*., 2000). The data from service providers showed that the majority of people who used these services used them on a short-term basis. There were people who were chronically homeless, who used the shelters for extended periods of time, and they accounted for 10% of the population (Kuhn & Culhane, 1998; Culhane, Metraux, & Wachter, 1999).

A problem with much of these data is that little is known about the characteristics of people who stopped using homeless services after a short time. In the majority of published research, these individuals were not tracked administratively, once they left the facility, or service, which was in marked contrast to those who repeatedly used homeless services, or used them for an extended period of time. The impact of being homeless on the life course of people

who experienced homelessness is poorly understood, partly because longitudinal data on homeless populations have been sparse, and limited to specific subgroups of the homeless population, such as those with severe mental illness (Susser *et al.*, 1997; Min, Wong, & Rothbard, 2004). Efforts to understand the course of homelessness from cross-sectional data (Wenzel, 1993; North, Polio, Smith, & Spitznagel, 1998) have been limited by the likelihood that short-term users of services for the homeless were underrepresented, in favor of those who used such services on a frequent or long-term basis (Link *et al.*, 1995).

Many of the available studies mention the health difficulties experienced by homeless people. It is difficult to stay healthy when living in an unsheltered situation, and once illnesses are experienced, they become much harder to treat under these circumstances. This issue is covered in the next section.

Health of Homeless People

Homelessness is a major public health issue as many homeless people suffer from a wide range of medical problems (Acorn, 1993; Wood, 1992; Gelberg, & Linn (1989). Disease severity can be remarkably high because of poverty, delays in seeking care, nonadherence to therapy, cognitive impairment, and the adverse health effects of homelessness itself (Wood, 1992).

The list of medical problems that are highly prevalent among homeless adults is a long one, and it includes seizures, chronic obstructive pulmonary disease, arthritis and other musculoskeletal disorders (Crowe & Hardill, 1993). Conditions such as hypertension, diabetes, and anemia are often inadequately controlled, and may go undetected for long periods of time (Gelberg, & Linn, 1989; Hwang & Bugeja, 2000). Oral and dental health is often poor (Lee, Gaetz & Goettler, 1994; Pizem, Massicotte, Vincent, & Barolet, 1994). Respiratory tract infections are common, and may become more serious than is typical among other groups. For

example, homeless people are at increased risk of contracting tuberculosis (TB), and this diagnosis should be considered in any homeless individual with a fever and a persistent productive cough. Conditions favoring TB outbreaks in shelters include crowding, large transient populations, and inadequate ventilation (Nolan *et al.*, 1991).

Not only are the unhoused at increased risk for physical ailments, but according to the Department of Housing and Urban Development's (HUD) 2013 Annual Homelessness Assessment Report (AHAR), of those who experience homelessness, approximately 257,300 people have a severe mental illness, or a chronic substance use disorder (HUD, 2013). Of the approximately 610,000 people who were homeless on a single night in January 2013, one in five had a serious mental illness (SAMHSA, 2014).

Gelberg (1997) noted that casual observations of homeless persons revealed that they were burdened with mental health, substance abuse, and physical health problems. Planning for appropriate and effective health services for homeless persons requires attention to the unique characteristics of the homeless population in terms of health status, barriers to obtaining and adhering to prescribed medical care, and integration of housing and health services.

The increased risk for illness among homeless persons compared with the general population is due to a variety of factors. People can become homeless because of a physical or mental illness, and homelessness itself can lead to physical and mental disability. Homeless persons are subject to the same risk factors for physical illness as the general population, but they are exposed to higher levels of such risks, as well as additional risk factors unique to homelessness. Additional hazards may include the excessive use of alcohol, illegal drugs, and tobacco; sleeping in an upright position (resulting in venous stasis and its consequences); extensive walking in poorly fitting shoes; and inadequate nutrition (Brickner *et al.*, 1985).

There are additional challenges posed by unsheltered living. Residing on the streets expose people to extremes temperatures. They are often not protected from rain or snow. Access to showers and clean clothes are restricted. Sleeping arrangements may be unstable. Possessions have to be carried, and shelters and dining rooms are usually crowded so that lining up for hours was a standard part of one's day.

Health problems are exacerbated by street life. Homeless individuals often came late to seek medical attention, and are less likely to return for follow-up visits. The homeless have a high prevalence of physical and mental illnesses, and frequently rely on emergency departments. They are often admitted for far-advanced conditions that could have been prevented, or treated earlier in an outpatient setting (Wlodarczyk & Prentice, 1988).

Furthermore, homelessness itself is physically dangerous; being without a home places a person at risk for victimization, as well as increased exposure to the elements. One third to one half of homeless adults and children had some form of physical illness (Burt & Cohen, 1989; Gelberg & Linn 1989; Morse & Calsyn, 1986; Wood, Valdez, Hayashi, & Shen 1990) making it more difficult for them to improve their circumstances (Robertson & Cousineau, 1986). More importantly, rates of mortality were three to four times higher in the homeless population than they were in the general population (Wright & Weber, 1987; Alstrom, Lindelius, & Salum, 1975; Hibbs *et al.,* 1994; Hanzlick, & Parrish, 1993; CDC, 1992).

Gelberg (1997) reported that a Hawai`i study found that the age and sex adjusted acute care hospitalization rate for homeless persons was 542 per 1,000 person-years as compared with the general population rate of 96 per 1,000 person-years. Homeless persons were admitted to acute care hospitals for 4,766 days, compared with a predicted 640 days, resulting in excess hospitalization costs of $2.8 million (Martell *et al.,* 1992). Despite having higher rates of disease

and medical hospitalization, the homeless were in fact less likely than the general population to use medical outpatient services. Fischer *et al* (1986) found that whereas only 24 percent of the homeless had used outpatient medical services during the preceding year, 43 percent of the general population had made such a visit during the same period. Furthermore, the majority of homeless adults stated that they did not obtain needed medical care in the previous year, (Robertson & Cousineau, 1986; Gelberg, & Linn, 1988) suggesting that the homeless might delay seeking medical attention at a stage when more severe illness could be prevented.

Now that some information has been presented on homelessness in the U.S., and the poor health experienced by unsheltered individuals, it is useful to turn to the specific case of Hawai`i. In focusing on the state, the next section provides an introduction to some of the challenges facing the homeless population here, and highlights the difficulties in data gathering specific to the islands.

Homelessness in Hawai`i

Every state is different, with unique social issues that challenge social work professionals. In Hawai`i, homeless clients may feature highly among a social worker's case load, since it was reported that at 465 people per 100,000 citizens, the Aloha State has the highest rate of homelessness per capita of any of the 50 states (Botelho, 2015). While social workers are accustomed to dealing with this clientele, many people avoid them because social media has portrayed them as dangerous due to their mental health conditions. Not all homeless people are mentally ill, and there are many different circumstances that result in people being unsheltered in Hawai`i. Perhaps, in future, members of the general public will understand better the dire conditions that lead people into homelessness, and show empathy, and treat them like regular citizens.

Yuan, Trundle, and Fong (2010) wrote that in Hawai`i, rising housing and rental costs were seen as important factors contributing to homelessness. It was also often caused by a series of cascading, interrelated events. The Hawai`i Homeless Utilization Report (2010) showed that more than half of the homeless population (56%) could not afford to pay rent. Other contributing reasons included: eviction (18%), a high level of family conflict (18%), overcrowded housing (18%), and lost or reduced employment (18%). It is a complicated process, which suggests that intervention at a number of key points will be needed to diminish the extent of this social issue for the Hawaiian population.

The numbers affected by homelessness are high. For example, Yuan and Gauci (2017) reported in the Hawai`i Homeless Utilization Report, covering July 1, 2015 to June 30, 2016, a total of 14,015 individuals in the Hawai`i homeless service system. These are staggering numbers of people, and only include those individuals accessing services. Of this group, 8,702 (62.1%) utilized outreach services, 7,313 (52.2%) sought shelter services, and 973 (6.9%) took advantage of rapid rehousing services.

These people were spread across Hawai`i, with the homeless count in the City and County of Honolulu (C & C Honolulu) numbering 9,130. Maui County had 2,702 clients, Hawai`i county had 1,690 clients, and Kauai County had 493 clients. The clients' prior living situations data showed that there were 1,192 (23.0%) in sheltered settings, 2,403 (46.4%) in unsheltered settings, 374 (7.2%) in institutional settings, 137 (2.6%) in unsubsidized housing, 44 (0.8%) in subsidized housing, 825 (15.9%) in "double-up" situations, and 205 (4.0%) in unknown/other arrangements. The "double-up" situations mentioned here referred to homeless clients living with friends and/or families in their houses. The numbers from this report represented an unduplicated count of persons who experienced homelessness, and received

shelter services during the 2016 fiscal year.

In addition to residential data about this group of homeless clients, there is also information about their demographic characteristics. According to Yuan and Gauci (2017), there were 2,938 (56.7%) males, 2,223 (42.9%) females, and 19 (0.4%) in the other/unknown category in C & C Honolulu. An examination of the age group data shows that the highest number served were aged between 40 and 59 years old, and this group included 1,457 (28.1%) people. The next most prevalent age group numbered 1,268 (24.5%) people, aged 25 to 39 years old. The final age categories included: 706 (13.6%) in the birth to 5 years old group, 863 (16.7%), who were aged 6 to 17 years old, 395 (7.2%) in a group of 18 to 24 year olds, and 468 (9.0%) aged 60 years or over. This reported showed that 1,569 (30.3%) children aged below 18 were homeless. Also, there were 2,750 (53.1%) families with children reported homeless during the financial year 2016. A small proportion of the records, 43 individuals (0.8%) did not include any accompanying age data.

For many years, the stereotypical homeless person was considered to be a single, old man (Rossi, 1990). Some of these data draw attention to the sad fact that in contemporary Hawai`i, many of the sheltered, homeless are children and their parents (Yuan & Gauci, 2017). The ethnic ascriptions proffered by the homeless also shatter some stereotypes about who is on the streets in this state.

In the shelters, Hawaiians and part-Hawaiians numbered 1,538 (29.7%), compared to 1,123 (21.7%) Whites. Other, smaller groups of clients included: Micronesian, 901 (13.5%); Marshallese, 311 (6.0%); Other Pacific Islanders, 385 (7.4%); Filipino, 278 (5.4%); Other Asian, 248 (4.8%); Black, 306 (5.9%); Native American, 74 (1.4%); and unknown, 216 (4.2%) (Yuan & Gauci, 2017). The categories used in this study do not make evident the great diversity of ethnic

groups represented here, since two of the categories included a wide number of national backgrounds. The “Other Pacific Islander” category included Samoans, Tongans, Guamanians/Chamorros, and other Pacific Islanders not listed individually. The “Other Asian” group included Japanese, Chinese, Koreans, Vietnamese, Asian Indians, and other Asians not listed individually. “Other/unknown” category included individuals who did not identify with any of the listed ethnic groups (Yuan & Gauci, 2017).

Stereotypes about the homeless are that most of them are lazy, and do not work (Wen, Hudak, & Hwang, 2007). Certainly, the data gathered here rely that broad characterization, showing a range of economic strategies employed. The sheltered, homeless population included 1,247 (34.7%) unemployed clients, 255 (7.1%) employed (part-time), 260 (7.2%) employed (full-time), and 1,834 (51.0%) in an unknown category.

Some of these sheltered, homeless individuals may have found it difficult to find jobs because of a lack of educational qualifications. Indeed, 434 (12.1%) of the clients had less than a High School diploma. However, 1,018 (28.3%) people possessed High School diplomas, or GEDs, with a smaller number of 279 individuals (7.8%) having some college attendance on their records, or a higher qualification. A sizeable proportion of the group was not asked, or did not respond to this question, and for 1,865 people (51.9%), their educational status is unknown (Yuan & Gauci, 2017). Not only were there were high percentages of people with no information about their educational status, this was also the case for their employment standing. It is unclear whether they did not have jobs and an income, or whether they merely failed to report their employment status and educational levels.

These data show some of the characteristics of the Oahu shelter-based homeless population (Yuan & Gauci, 2017), but there are many other key pieces of information which are

lacking, and which would be helpful for understanding the population better, and for providing more effective interventions. This leads to the statement of the identified gap in research, which this study will attempt to bridge.

Documented Need for the Research

This section of the chapter covers the gaps in research, which will be filled by this study, and provides an introduction to the research question, and the purpose and significance of the study.

Research Gap

There is a gap in knowledge about the perceived health status of the homeless population living in Oahu's homeless shelters. Each homeless shelter may have a record of residents' health issues, including the number of hospitalizations, emergency room visits, medications, and other data. However, these shelter records do not appear in research reports, nor are they gathered in a form useful for social workers dealing with the population. There do not seem to be many studies examining the general health, the physical and mental health statuses of sheltered residents. While this is probably due to a number of reasons, such as the temporary stays of the homeless residents, shortages of staff and resources, language problems with migrants, and other factors, these data would also be valuable for specialists seeking to diminish homelessness in Hawai`i.

Though we know that Native Hawaiians are over-represented in the homeless population (Yuan & Gauci, 2017), little is known about their health status. This also applies to other ethnic communities like Whites, Pacific Islanders (including Micronesians), Asians and other small represented groups. There is some health data on the Native Hawaiians, Pacific Islanders, and Asians who compared with the Whites and it is given in the literature review section. It gives a general idea on the prevailing health conditions of these people who are in non-homeless

situations.

Given that there is a deficiency of health data for this specific population, what type of information is useful to gather, and how might this proceed? This is the focus of the following section, and will be covered in greater depth later in this study.

Purpose and Significance of the Study

The purpose of the study is to explore the impact of sociodemographic characteristics (such as race/ethnicity, gender, SES, age and participants with and without children), the Length of Homelessness (LOH) and social support on perceived health status of homeless people in Oahu. The availability of social support may increase or decrease health problems, and it should not be assumed that men and women would react the same, under similar circumstances. Homelessness may be assumed to contribute high level of stress, which is likely to affect health conditions (Gelberg, 1997). It is possible that men and women not only react differently to stressful situations (Matud, 2004), but may also use social support in various ways (Lowenthal and Haven, 1968)

This study direction is innovative, since there have been few studies that explored the impact of race/ethnicity, gender, class, age, participants with and without children, the Length of Homelessness (LOH) combined with the perceived availability of social support, and its effect on the perceived health status of sheltered, homeless people. It is known that they face challenges such as unemployment, stigma, and discrimination that make their daily living stressful, and contribute to their poor health status. Homelessness and the length of homelessness (LOH) are known chronic stressors that have negative impacts on health conditions.

This study is important at this point in time, given the high rates of homelessness in Hawai`i, and the poor health status of this population. This group of people desperately needs

more study, in order to provide data, which might prove helpful in decreasing the disease burden borne by this portion of the community, and also improving the prospects of rehousing more members of this community.

There is little information on the health status of the sheltered homeless population in Oahu. Though many research studies showed that homeless people in general, had health disparities and were likely to suffer mental health issues, there were no data to support this statement in regards to Oahu's homeless people. Homeless people often do not have medical insurance, and delay or avoid regular follow-ups with the doctors. Local hospital records show a trend of homeless visits to emergency rooms during medical crises. So, there is a need to explore the health status of the homeless people staying in shelters.

It is significant to know the homeless people's self-perceptions of their health. It can serve as proxy measures for the perceived symptom burden of both acute and chronic health conditions. It can be also predictive of the future burden on the health care delivery system (Idler & Benyamini, 1997; Pijls, 1993). The study explores the health status of homeless men and women living in Oahu's shelters. They received social support through various channels such as service providers, community agencies, families, friends and other sources. Race, gender, SES, age, participants with/without children and together with the homelessness period and social support availability seem likely to play significant roles on the perceived health status of homeless individuals. Given the stressful living situation of the sheltered participants, the study explores perceived health status, with the goal of providing useful recommendations to service providers, case managers, and other service professionals working with this community. Homeless people often delayed or avoided visits to hospitals on a regular basis. When there was a crisis, they rushed to emergency services at hospitals, which were costly. The data on the

perceived health status would also be helpful to hospitals, health care providers, and clinicians, as it would reduce hospitalization costs by providing better health care plans.

Now that some information has been provided on the purpose and significance of the study, it is useful to provide a brief introduction to the methods that will be utilized. It is helpful to understand the research design and definitions, which will be used before turning to the following chapter, covering previous academic research underlying this project.

Brief Introduction to the Research Study

Research design

The research design is a cross-sectional, quantitative study, with a sample size of 151. The participants were recruited from four homeless shelters on Oahu. Three surveys and a sociodemographic form (SF) were administered to the participants. The surveys include the Healthy Days Core (HDC), Interpersonal Support Evaluation List (ISEL), and the Length of Homelessness (LOH) questionnaire, each of which are discussed briefly below.

Variables and Questionnaires

There are three dependent variables (DV) measuring the perceived health status of the homeless participants for this study. The three DVs are self-rated general health, physically sick days and mentally sick days. There are seven independent variables including gender, race/ethnicity, age, SES, participants with and without children, length of homelessness (LOH), and social support.

This study uses the Healthy Days Core (HDC) survey to ask about participants' general health, physically and mentally sick days. Researchers in social work and public health have used the Healthy Days Core (HDC) survey widely. The Interpersonal Support Evaluation List (ISEL) survey enquires about various types of social support received by the participants. The

Length of Homelessness (LOH) survey investigates the duration of homelessness. Additional questions about the Length of Homelessness (LOH) and social support availability were also used to determine the level of perceived health status of the homeless participants.

In addition to brief information about the questionnaires, it is also important to consider the definitions of key terms used in this research. The issues covered in this study are discussed in academic journals, along with government circles, and public media. The result is that very different definitions may be used in these various settings. For this reason, it is important to clarify the operational definitions that will be applied in this study. Not only are these definitions important for the final conducted research, but also the definitions guide the literature review, and for this reason, they are provided here, although they will be further considered in the Methods Chapter.

Definitions

Homelessness. According to the National Alliance to end Homelessness (2012), the U. S. Department of Housing and Urban Development (HUD) has made changes to the definition of 'homelessness'. The new definition includes four broad categories of homelessness, all of which will be included in this study:

(1) "People who are living in a place not meant for human habitation, in emergency shelter, in transitional housing, or are exiting an institution where they temporarily resided;
(2) People who are losing their primary nighttime residence, which may include a motel or hotel or a doubled-up situation, within 14 days and lack resources or support networks to remain in housing;
(3) Department of Housing and Urban Development (HUD) had previously allowed people who were being displaced within 7 days to be considered homeless;

(4) People who are fleeing or attempting to flee domestic violence, have no other residence, and lack the resources or support networks to obtain other permanent housing".

The four broad categories of "homelessness" are included here as the participants in the four shelters are likely to come from different circumstances, crisis, or housing situations.

Social Support. Heaney & Israel (2008) defined social support as one of the important functions of social relationships. Social support is always intended by the sender to be helpful, thus distinguishing it from intentional negative interactions (such as angry criticism, hassling, undermining). Social support is commonly categorized into four types of behaviors. The four types of supportive behaviors are emotional (expressions of empathy, love, trust and caring), instrumental (tangible aid and service), informational (advice, suggestions and information) and appraisal (information that is useful for self-evaluation).

After this brief presentation about homelessness in Hawai`i, and the challenges in dealing with this issue on the islands, it should be evident that this research contributes to understanding a major problem here. The goal of the study is to provide information for social workers, and others dealing with client-focused intervention, either in outreach settings, or at service facilities. Clients are presenting with physical and mental health issues, and social workers are challenged in how to provide help in the most effective manner. An exploration of how social support and other sociodemographic factors play a role in perceived health status has the potential to assist social workers at the front lines.

Chapter 2. Literature Review

This chapter presents the research underlying this study. This presentation focuses on materials, which are relevant to the sociodemographic information, specifically, race/ethnicity, gender, SES, age and participants with and without children. Additional factors were considered in this study (i.e., the Length of Homelessness (LOH) and social support), and health. This literature review appears a bit piece-meal because of the challenges in presenting such a broad array of topics in a logical manner. In some cases, portions of research reports appear in more than one section of this chapter because different sections of studies may be relevant to different sub-topics under discussion. It has been a challenge to gather information on the health status of homeless people living in Oahu, so this literature review looked at the health issues of different ethnic groups living in the U. S. Some health reports were collected from the Hawai`i Department of Health and local organizations, while other reports were taken from the national estimates.

Quantitative analyses will also examine the separate influences of race/ethnicity, gender, SES, age, participants with/without children, the Length of Homelessness (LOH) and social support on people's perceptions of their health status. For this reason, it is valuable to explore previous research about each of these demographic factors and how each influences health. Race/ethnicity is considered first.

Race/Ethnicity

This study looks at all the ethnic groups represented living at the four homeless shelters. Notably, Native Hawaiians, Micronesians, Whites, and Asians are some of the larger ethnic

communities living in the shelters. It has been a challenge to gather data on the health status of these ethnic groups living in homeless shelters. So, it is important to look at the major health problems experienced by these ethnic communities. The health of Native Hawaiians, Pacific Islanders, and Asians were compared to the Whites health in several studies. Micronesians are included as Pacific Islanders in these studies. However, this study has Micronesians as a separate group and not labeled as Pacific Islanders.

The Native Hawaiians and Pacific Islanders (NHPI) community faces some serious health concerns compared to other ethnic groups in the U. S. A report by *A Community of Contrasts* (2014) mentioned that the Native Hawaiians and Pacific Islanders (NHPI) community faces disproportionately high rates of obesity, cancer, diabetes, and mental illness. However, there is a lack of data to attest to this disparity as many health agencies and institutions often use the overly broad Asian Pacific Islander category, which masks the health issues of the country's 1.2 million NHPI within a larger grouping that includes 17.3 million Asian Americans. Moreover, the NHPI community's disproportionately high uninsured rate and the lack of culturally and linguistically appropriate services create significant barriers to becoming a healthier and more productive community.

According to a report by the University of Hawai`i Cancer Society, and the Hawai`i Department of Health, lung and bronchus cancer is the leading cause of cancer death for Native Hawaiians statewide (Hawai`i Cancer Facts & Figures, 2010). Hawai`i Health Data Warehouse (HHDW) (2012) mentioned that between 2009 and 2011, the leading cause of death among NHPI was heart disease (654 deaths per 100,000), a rate higher than any other racial group. The second leading cause of death was cancer (458 deaths per 100,000) (HHDW, 2012). Native Hawaiians had the largest number of deaths from diabetes of any major ethnic group in the state

of Hawai`i between 2009 and 2011. About 28% of those who died from diabetes were Native Hawaiian (HHDW, 2012).

Poor dental health is a critical issue that is connected to other diseases. About 43% of NHPI in the state of Hawai`i have not visited a dentist in the past year, a rate higher than any other racial group and higher than average (30%) (CDCP, 2012). In 2010, about 45% of Native Hawaiians and 48% of other Pacific Islanders living in Oahu had not visited a dentist in the past year (HHDW, 2010).

Over 16% of Pacific Islander adults are uninsured in Oahu, a rate higher than any major racial group in the area and much higher than average (7%). This data is for Pacific Islanders, not including Native Hawaiians. The race and ethnic groups used for comparison were White, Black, Native Hawaiian, and Chinese, Filipino, and Japanese American (HHDW, 2010). The Centers for Disease Control and Prevention (CDCP) (2012) reported that statewide, about 45% of NHPI are obese, a rate higher than any other racial group and higher than average (23%).

It is challenge to make predictions as to which ethnic community will be likely to have poorer health status amongst the sheltered residents. It is an exploratory study and will be interesting to know the results of the findings later. These are merely some studies among many that demonstrated the links between ethnicity and health. It will be clear in the next section of this review that similar connections can be found between gender, and health outcomes.

Gender

Patterns of health and illness in women and men showed marked differences. Most obviously, women as a group tend to have longer life expectancy than men in the same socio-economic circumstances (WHO, 1998). Yet, despite their greater longevity, women in most communities reported more illness and distress than their male counterparts (Blaxter, 1990;

Rahman *et al*, 1994; Rodin & Ickovics, 1990; U. S. National Institutes of Health, 1992).

Gender is a measure of both biological/genetic and social differences. It was likely that the health inequalities between men and women reflected both sex-related biological and social factors, and the interplay between them (Bird & Ricker, 1999; Verbrugge, 1989). Denton, Prus and Walters (2004) wrote that while women generally experienced poorer health than men, the pattern of gender differences in health was varied (Arber & Cooper, 1999; Macintyre, Hunt, & Sweeting, 1996; Hunt & Annandale, 1999). Women had lower rates of mortality but, paradoxically, reported higher levels of depression, psychiatric disorders, distress, and a variety of chronic illnesses than men (Baum & Grunberg, 1991; McDonough & Walters, 2001; Verbrugge, 1985). However, the direction and magnitude of gender differences in health varied according to the symptom/condition and phase of the life cycle. Females exceeded males consistently across the lifespan in terms of distress, but this was far less apparent, even reversed, for a number of physical symptoms and conditions (Macintyre *et al*., 1996; Matthews, Manory, & Power, 1999).

Bird and Reiker (2008) wrote that women lived longer than men, yet women had higher morbidity rates. Men experienced more life-threatening chronic diseases, whereas women had more nonfatal acute and chronic conditions. According to the United Nations (2000 & 2005), women outlived men in every region, and almost every country of the world. The size of the gender gap, and the pattern of longevity varied considerably by country. Various reasons were identified, and biological factors alone were not considered a sufficient explanation for the cross-national gender differences.

Furthermore, although the overall rate of serious mental illness was similar for men and women, the most common mental health disorders differed by gender. Most notably, women

experienced higher rates of depression and anxiety disorders, whereas men had higher rates of substance abuse and antisocial behavior disorders (Bird & Reiker, 2008). Also, studies have suggested that Asian American women experience high rates of depression, suicide, and other mental health-related disorders (Tanjasiri & Nguyen, 2009). In fact, the rates of mental health disorders among some subgroups of Asian American woman may far exceed those of the general population. Older Asian American women have the highest suicide rate of all women over the age of sixty-five in the United States, with elderly Chinese and Japanese women having the highest rates among Asian Americans (U. S. Department of Health and Human Services, 1994). Similarly, young Asian American women between the ages of fourteen and twenty-four have the highest rates of suicide (Office of Minority Health, 2007). Although life expectancy has been increasing for both men and women, the gender gap in longevity in the United States has been closing since 1980, when men's gains began to exceed women's due in large part to men's rapid decline in smoking and decreasing mortality from cardiovascular disease (CVD) and cancer (NCHS, 2003; Pampel, 2002; Preston & Wang, 2002). For example, between 1990 and 2004, men gained 3.4 years in life expectancy, compared to less than 1.6 years for women, in part due to more rapid declines in smoking among men (NCHS, 2006). In addition to experiencing more rapid gains in life expectancy in recent decades, on average men had been gaining healthy years, whereas women's gains in life expectancy reflected an increase in years spent living with a functional disability (Centers for Disease Control [CDC], 2000; Crimmins, Kim, & Hagedorn, 2002; NCHS, 2003).

There have been numerous studies that specifically examined the health of men and women separately from various ethnic communities and give detailed information about different health problems. Choe (2009) reported that data from the National Cancer Institute's

Surveillance, Epidemiology, and End-Results Program (SEER) have been used to estimate age-adjusted incidence and mortality rates among different racial and ethnic populations. Among Asian American and Pacific Islander ethnic groups for which SEER data were available, overall male age-adjusted cancer incidence rates were higher among Native Hawaiian and Samoan men (Miller, Chu, Hankey, & Ries, 2008). Compared with white men, overall cancer incidence rates were lower in all Asian American and Pacific Islander groups for which SEER data were available.

The three most commonly occurring cancers among white men (prostate, lung, and colorectal cancers) were also among the top five occurring cancers in each of the studied Asian American and Pacific Islander groups for which SEER data were available, but rates vary dramatically among ethnic groups (Miller *et al*., 2008). Lung cancer incidence among Native Hawaiian men and colorectal cancer incidence among Japanese men exceed the rate among white men. Bladder cancer and Melanoma skin cancer – the fourth and fifth most common cancers among white men – were much less common and not among the top five cancers among Asian American and Pacific Islander groups (Miller *et al*., 2008).

Cardiovascular disease represents the second highest cause of death for Asian American and Pacific Islanders males of all ages and the highest cause of deaths (29 percent in 2004) for Asian American and Pacific Islander men sixty-five years of age and older (Heron, 2007). Compared to whites, Chinese Americans had the lowest relative risk (40 percent lower) of cardiovascular hospitalization; Japanese Americans and Filipinos had cardiovascular hospitalization rates similar to that of whites. Pacific Islander groups have especially disproportionate risk for cardiovascular disease; for example, the age-adjusted annual mortality rate per 100,000 population for full Native Hawaiians was 341 compared to 126 for part-

Hawaiians and 89 for non-Native Hawaiians (Office of Hawaiian Affairs, 1996). One interpretation for such high risk for cardiovascular death among full Native Hawaiians compared to part-Hawaiians might be greater genetic predilection for heart disease and heart disease risk factors. Another interpretation is that the lower socioeconomic measures among this group are associated with higher levels of cardiac risk factors, such as smoking and obesity, and with poorer access to adequate preventive health care (Choe, 2009).

A strong independent risk factor for cardiovascular disease, diabetes mellitus has been increasing in prevalence in all racial and ethnic groups in the United States (Centers for Disease Control and Prevention, 2005c). Associated with obesity and overweight, most new cases of diabetes are type 2 and adult in onset. Aggregated data that reflect low rates of obesity would suggest relatively low rates of diabetes among Pacific Islanders. Data from the 2001 Behavioral Risk Factor Surveillance System reflected such a pattern; when adjusted only for age and gender, Asians had risks comparable to whites for development of diabetes ; Pacific Islanders had more than three times higher risk for development of diabetes (McNeely & Boyko, 2004). However, after adjustment for body mass index, Asian Americans were found to have 60 percent elevated risk for diabetes. Stated differently, for any given weight or body mass index, Asian Americans were found to be more likely to develop diabetes than whites (Diabetes Prevention Research Group, 2000).

Tanjasiri & Nguyen (2009) wrote that epidemiological data on the health status of Asian American and Pacific Islander women are still scarce, particularly gender-specific data disaggregated by ethnicity. There is some data on selected health issues that comprise the major causes of mortality and morbidity among these women, with prevalence and incidence information reported where available to highlight particularly disparate health needs.

Cancer is the leading cause of death for Asian American and Pacific Islander women in the United States, with breast cancer as the most common cancer for all but Laotians; rates range from 36.9 per 100,000 for Laotians to 175.8 per 100,000 for Native Hawaiians (Miller, Chu, Hankey, & Ries, 2008). Although breast cancer mortality rates have declined among all other racial groups in the United States, they have increased among Asian American and Pacific Islander women (American Cancer Society, 2000; Kwong, 2004). Selected studies among Asian Americans show them at risk for breast cancer at younger ages and with more aggressive types (Brown, Tsodikoy, Bauer, Parise, & Caggiano, 2008). Late-stage diagnosis for breast cancer also contributes to increased breast cancer mortality for Asian American (Ngo-Metzger *et al*., 2000; Kagawa-Singer & Pourat, 2000; Lin *et al*., 2002) and Hawaiian or other Pacific Islander (Marshall, Ziogas, & Anton-Culver, 2008) women.

Another disease is coronary heart disease which is the primary cause of death for Asian American and Pacific Islander females (in aggregate) aged seventy-five years and over, and the second leading cause of death for females aged forty-five to seventy-four (Centers for Disease Control and Prevention, 2002).

Domestic violence amongst homeless women is another important cause for health issues. The domestic violence experiences are not unusual, since between 22 and 57% of all homeless women report that domestic violence was the immediate cause of their homelessness. Over 80% of survivors entering shelters identified “finding housing I can afford” as a need, second only to “safety for myself” (85%) (NNEDV, n.d.). Another study found that women who had experienced any type of personal violence (even when the episode was 14 to 30 years ago) reported a greater number of chronic physical symptoms than those who had not been

abused. The risk of suffering from six or more chronic symptoms increased with the number of forms of violence experienced (Nicolaidis *et al*., 2004).

It seems that both men and women experience high prevalence of physical health problems. However, given the data on women and mental health issues, one can predict that women are more likely to suffer from mental health problems than men. Thus, given the health data, it is significant to study the impact of gender on the perceived health status of the homeless population.

Class

Class, or Socio-Economic Status (SES) is "a composite measure that typically incorporates economic status, measured by income; social status, measured by education; and work status, measured by occupation" (Dutton & Levine, 1989, p. 30). The fact that associations between SES and health were found with each of the indicators suggested that a broader underlying dimension of social stratification or social ordering was the potent factor (Adler, Boyce, Chesney, Cohen, Folkman, Kahn, & Syme, 1994).

Low-income individuals and families more likely experience life stressors associated with financial burden, which is reflected in higher mortality, lower disability-free life expectancy, and less healthy lifestyles (Wilkins & Adams, 1987). Link and Phelan (1996) wrote that SES is a fundamental cause of disease. It independently could contribute to negative health outcomes amongst low-income disadvantaged groups, especially the homeless. It also could affect other social factors, such as access to resources, or discrimination (Williams, 1999). Numerous studies showed the existence of a social gradient, in which rates of morbidity and mortality decreased directly and proportionately, with each increase in level of income or education (Marmot, 1999; Adler & Ostrove, 1999). Rahkonen, Lahelma, and Huuhka (1997)

contributed the idea that people from the lower SES groups might experience more distress and poorer health outcomes because they lacked the ability to purchase goods or services that reduced stress, minimized sources of stress, or that could be used to prevent or treat illnesses. There is some support for this idea, although some studies suggested that occupational social class was the strongest correlate of illness or health, while other studies indicated that income variables were more closely linked to health outcomes (Smith & Hart, 1998; Adelmann, 1987; Ulbrich, Warheit, & Zimmerman, 1989). Reynolds & Ross (1998) suggested that occupational status was associated with psychological and physiological symptoms of stress.

Research has also affirmed that education variables predicted health outcomes, and these effects have been found to extend beyond those associated with access to high social status or income (Pappas, Queen, Hadden, & Fisher, 1993). The only conclusion to be reached was that all of these variables were associated with health, and that together they explained the SES effects on health. Alternatively, these conditions caused people to live in more stressful, hazardous environments, and subjected them to social and fiscal privations. This left the SES construct as a general variable that included loosely associated conditions that individually affected health and well-being, or that were correlated with other conditions that were stressful (Baum, Garofalo, & Yali, 1999).

This research includes all ethnic groups living on Oahu. The Hawai`i Homeless Utilization Report FY 2016 (Yuan & Gauci, 2017) mentioned that Native Hawaiians, Pacific Islanders, Whites, and Asians are among the most popular ethnic groups represented in the homeless population. When looking at the SES of Native Hawaiians and Pacific Islanders (NHPI), there are several national and state reports that indicated their relatively lower SES compared to other ethnic groups in Oahu.

The U. S. Census Bureau (2011) reported that NHPI fare worse than any other racial group across multiple measures of income. NHPI have the highest poverty rate (14%), highest proportion of low-income (31%), and lowest per capita income ($19,076) of any other racial group in Oahu. It added that "Native Hawaiians face worse compared to the total population across all three measures of income, while Tongan, Samoan, and Marshallese Americans fare worse than any racial group. Close to half of Marshallese Americans live in poverty, nearly three-quarters are low-income, and they earn a per capita income of $6,495. Between 2007 and 2011, the number of unemployed NHPI increased to 67%, a rate higher than any other racial group and much higher than average (47%)."

Given the data on low-income earners and their health issues, it is a good prediction that the participants in low SES are likely to have poorer health status than those in middle or high SES. In addition to SES having an impact on health, the age and absence/presence of children living with the participants also play roles in health status. While SES consists of several different measurements, which may increase or decrease, and may not be in concert with one another, age is typically a continuous measurement. The minimum age requirement for this study is 18 years old. Some of the participants at the shelters did not have children while others live with their children. The matter of age and participants with/without children and its health connections are considered below.

Age

Age was included as a variable to determine the perceived health status of homeless participants. The participants in this study are aged 18 and above. So, we need to look not only at the older adults' health status but also young adults' health conditions. First, we will look at

the prevalence of health problems of young homeless adults and then look at the geriatric homeless population.

According to the 2016 Annual Homeless Assessment Report, over 30,000 unaccompanied homeless young adults (ages 18 to 24) were identified across the United States in the annual Point-in-Time Count in January 2016 (U. S. Department of Housing and Urban Development, 2016). Prior studies have found that one-third of homeless youth and young adults meet criteria for a mental disorder (Cauce *et al*., 2000; Hodgson, Shelton, & van den Bree, 2014; Whitbeck, Johnson, Hoyt, & Cauce, 2004) so it is likely that many of these young adults are struggling with a mental health problem requiring treatment. Yet, studies have identified low rates of outpatient mental health service use among young adults overall (Center for Behavioral Health Statistics and Quality, 2015) and with homeless youth specifically (Berdahl, Hoyt, & Whitbeck, 2005; Solorio, Milburn, Andersen, Trifskin, & Rodriguez, 2006). Instead, both young adulthood and homelessness put youth at risk for accessing services through crisis-oriented, emergency care (IOM, 2015; Solorio, Milburn, Andersen, Trifskin, & Gelberg, 2006). Narendorf (2017) wrote that another critical aspect of understanding mental disorders among homeless youth is the presence of trauma, both before and after homelessness.

One study of nearly 400 youth ages 13–24 in Los Angeles found that prior to homelessness, 71% had come from adverse home environments characterized by domestic violence or substance use, 51% had experienced physical abuse and 33% had experienced sexual abuse (Wong, Clark, & Marlotte, 2016). In their study of homeless youth in London, Craig and Hodson (1998) found that 69% had experienced an adverse childhood event. In the Los Angeles study, most had experienced multiple traumatic events with a mean of 3.8 out of 10 traumatic events prior to becoming homeless (Wong *et al*., 2016). These experiences were directly related

to psychological problems assessed in the study including post-traumatic stress disorder (PTSD), depression, and self-injury with sexual trauma and cumulative trauma exposures having particularly significant effects (Wong *et al*., 2016). In addition, trauma exposure continues once young people become homeless. Studies have found that up to 83% of homeless adolescents on the streets were physically or sexually victimized after becoming homeless (Stewart, Steiman, Cauce, Cochran, Whitbeck, & Hoyt, 2004) and many also witness traumatic events (Bender *et al*., 2014). In an analysis of three latent victimization classes identified based on victimization after becoming homeless, Bender *et a*l 2014 found that those with high victimization as well as those that had witnessed traumatic events had elevated risk for PTSD and major depressive disorder compared to those with low victimization experiences. Length of time on the streets has also been associated with mental health problems, with those who remain on the streets longer at increased risk for psychological problems (Solorio, Milburn, Andersen, Trifskin, & Rodrigues, 2006), possibly due to the victimization experienced while homeless. The Martijn and Sharpe (2006) study specifically examined the role of trauma and its relationship to psychological problems in pathways to homelessness and identified a specific group representing 25% of the sample in which a traumatic event had preceded a mental health diagnosis of PTSD or Major Depression or both.

On the other hand, a percentage of the homeless population is aging and their health status is important and needs to be explored in this study. Brown *et al* (2011) mentioned that the average age of the U. S. homeless population is increasing. One-third of homeless adults are currently aged over ≥ 50, increased from 11% in the 1990s (Hahn *et al*., 2011). Limited earlier research suggests that homeless adults suffer premature mortality and age-related medical conditions compared to the general population. Homeless persons have age-adjusted mortality

rates 3-4 times higher than domiciled adults (Hibbs *et al*., 1994), and the proportion of homeless adults in their 50s with chronic diseases (e.g. hypertension) is similar to housed adults aged ≥ 65 (Garibaldi, Conde-Martel, & O'Toole, 2005; Gelberg, Linn, & Mayer-Oakes, 1990).

While the onset of chronic disease in homeless adults appears to be accelerated, the degree to which they experience geriatric syndromes (e. g. functional impairment, cognitive impairment, frailty, depression, hearing impairment, visual impairment, and urinary incontinence) has not been well-studied (Brown *et al*., 2011). Geriatric syndromes are associated with higher mortality (Tschanz *et al*., 2004), disability (Tinetti, Liu, & Claus, 1993), and use of acute care services (Mor *et al*., 1994). However, research advances over the past two decades demonstrate that these syndromes are preventable or amendable to relatively simple interventions (Gillespie et al., 2009). While delivering standard treatments to homeless patients can be challenging, geriatric syndromes cannot be addressed if they remain undetected. Therefore the goal of this study is to explore the impact of age on the perceived health status of the homeless population.

It is predictable that the homeless participants aged above 50 years are more likely to have health problems and poorer health outcomes compared to the younger participants. In addition to the variable of age, this study also examined the participants with and without children and their health status. The participants with and without children variable here, is considered to be unaccompanied adults or adults living with their children in the shelters. This topic is further explored below.

Participants with and without children

There are single, homeless men and women and homeless persons with children living in the shelters. The single participants are unaccompanied adults while other participants are with

or without spouses/partners and living with their children. This study includes homeless participants with and without children variable to examine its relationship to the perceived health status. The health problems of nonparents (single, homeless men and women) are equally significant along with parents with children.

Svoboda and Ramsay (2015) reported that men who are homeless make up a large proportion of frequent users of the emergency department (Hwang, 2001; Mandelberg *et al*., 2000). This group is more likely to present with issues related to chronic alcohol use including intoxication, seizures and various forms of trauma including head injury that may lead to altered levels of consciousness (Little & Watson, 1996; Mandelberg *et al*., 2000, Svoboda & Ramsay, 2013). Injury is a leading cause of death in homeless or under-housed men (Hwang, 2000). Recent research shows that homeless and low-income housed men are significantly more likely to sustain frequent mild to severe head injuries, at a rate approximately 5 times that of the normal population and up to 400 times higher among those who are chronically homeless with severe problems related to alcohol use (Hwang *et al*., 2008; Svoboda & Ramsay, 2013). Among those who are chronically homeless and heavy users of alcohol, an altered level of consciousness can in and of itself be a measure of harm and it can further be a concerning presentation as it is frequently associated with traumatic brain injury, heavy substance both of which are further related to poor mental health including anxiety, depression and dementia (Greene 2007; Hwang *et al*., 2008; Podymow *et al*., 2006a; Svoboda & Ramsay, 2013; Thornquist *et al*., 2002).

Buckner, Bassuk, and Zima (1993) wrote that the proportion of psychiatric impairments among homeless women with children appears to be greater than that for poor housed mothers. A study comparing homeless and poor housed mothers in Massachusetts found that 27% of the former, compared to 10% of the latter, were diagnosable with a DSM-III Axis 1 disorder or had a

history of psychiatric hospitalization (Bassuk & Rosenberg, 1988). Bassuk, Rubin, & Lauriat (1986) also reported a high prevalence of Axis II personality disorders among homeless mothers, although they questioned the validity of these diagnostic labels for low-income women because they do not take women's life experiences and social contexts into account. In Los Angeles, Wood *et al*. (1990) found that 14% of homeless mothers, compared to 6% of housed mothers, had previously been hospitalized for mental health problems.

There are also studies on single, homeless women who suffer from psychiatric and addiction problems. In a study involving a sample of 240 homeless African-American and Caucasian women in St. Louis, unaccompanied homeless women tended to have been homeless longer, to be older, white, more likely to suffer from a psychiatric illness, and to drink more heavily than homeless women with dependent children (Johnson & Kreuger, 1989).

Burt and Cohen (1989) collected nationwide data on over 1700 homeless adults in cities and examined differences among single women (*N*=242), women with children (*N*=288), and single men (*N*=1042). Among females, 83% of women with children and 59% of those without were nonwhite. Compared to single women, those with children were younger and less educated, had been homeless for less than half of the time (15 versus 34 months on average), were more than three times less likely to have been hospitalized for a psychiatric problem (8% versus 27%), and were less than half as likely to have received inpatient treatment for chemical dependency (7% versus 19%). Suicide attempts were reported by 14% of women with children, compared to 26% of single women. On the other hand, women with children reported a greater degree of psychological distress as measured by the Center for Epidemiologic Studies-Depression Scale (CES-D).

Epidemiological surveys indicated that these women with children have higher rates of

anxiety and depression than any other marital status group (Bachrach, 1975; Guttentag *et. al*., 1980; Radloff & Rae, 1979), and utilization studies showed that single mothers were proportionately the major consumers of mental health services (Guttentag *et al*., 1980). In addition, single-parent family status has profound implications for the mental health of a growing number of children (Hetherington *et al*., 1977). Single mothers were reported to be more vulnerable than others to stressful life events and common everyday strains because they had fewer social or personal resources with which to cope with the effects of stress (Pearlin & Johnson, 1977; Brown & Harris, 1978; Pearlin & Schooler, 1978; Kessler, 1979).

One study demonstrated that age-adjusted mortality rates were higher for nonparents than for parents (Kobrin & Hendershot 1977). Durkheim (1951) stressed the importance of the parent-child relationship as a source of integration in his classic study of suicide, in which suicide rates were found to be higher for the childless than for parents. His view of social integration depended on the existence of family relationships (marriage and parenting), and was seen as affecting the individual's social environment. These relationships involved elements of obligation and constraint, as well as a sense of meaning and purpose. Thus, family relationships affected psychological well-being and health behaviors by shaping one's social environment and lifestyle.

The single, homeless people are more likely to face poorer health status compared to the participants living with their children in the shelters. The single participants are lonely while the parents have the social support of their children. These parents find time to spend with their children and destress themselves.

Besides the sociodemographic factors, the length of homelessness (LOH) variable is added to examine the links between duration of homelessness and health problems. The next

section will discuss some studies that examined the negative consequences of homelessness.

Length of Homelessness (LOH)

Homelessness itself was an unhealthy circumstance promoting illness and reduced well-being; it was a chronic stressor (Fitzpatrick & LaGory, 2000). Severe distress could trigger significant mental health problems (Lin *et al*., 1986; Wright *et al*., 1998), which were prevalent among the homeless; approximately 20% to 30% of all homeless suffered from some form of severe chronic mental illness (National Coalition for the Homeless, 2006; North, Eyrich, Pollio, & Spitznagel, 2004; Wright *et al*., 1998). Depression was of particular concern, with a significant majority of the homeless displaying depressive symptomatology commensurate with a clinical diagnosis (LaGory, Ritchey, & Mullis, 1990; Rossi, 1989; Schutt, Meschede, & Rierdan, 1994). Clearly, the higher prevalence of distress, coupled with lower levels of economic and social support, produced a distinct disadvantage for the homeless when dealing with mental health issues. It might be assumed that a longer period of time living on the street would increase the level of effect, and this is presented in the next section.

Fitzpatrick and LaGory (2000) wrote that homelessness was a chronic stressor that caused psychological distress and increased mental health issues (Lin *et al*., 1986; Wright *et al*., 1998). Living on the street was in itself a stressor, and increased a person's vulnerability to certain stressful life events. For instance, within the homeless population, there was a higher documented rate of physical and sexual abuse (D'Ercole & Struening, 1990; Wenzel, Koegel, & Gelberg, 2000), and therefore, a homeless person is more at risk for stressful life events than the domiciled person (Munoz, Panadero, Santos, & Quiroga, 2005). Letiecq, Anderson, and Koblinsky (1996) mentioned that although there had been little research addressing the relationship between social support, and the length of time a family has spent in temporary

housing, there was some evidence that prolonged periods of homelessness led to increased social isolation. In one study of 166 homeless individuals in Austin, Texas, longer periods of homelessness were associated with increased disaffiliation and social isolation (Grigsby *et al*., 1990).

While, some of these studies have distinct implications for homeless people in Hawai`i, the situation here is slightly different. It is clear that residents in homeless shelters in Oahu, as in other locations received some support through case management services, churches, families, and friends. Some of them have experienced homelessness for a long time. The 1-item, the Length of Homelessness (LOH) survey that asked about the duration of the homeless situation was added to examine its association with social support and the perceived health status of the homeless population. After reading the literature on the length of homelessness, it is likely that the longer the period of homelessness, the more likely it is to negatively affect the health status of the homeless person.

Social support is a term that has appeared numerous times in this literature review, and it is important to explore it further, given its major role in this study. This following section explores the academic literature relating to social support, and its role in health.

Social Support

Heaney & Israel (2008) defined social support as always intended by the sender to be helpful, thus distinguishing it from intentional negative interactions (such as angry criticism, hassling, undermining). Social support is commonly categorized into four types of behaviors. The four types of supportive behaviors are emotional (expressions of empathy, love, trust and caring), instrumental (tangible aid and service), informational (advice, suggestions and information) and appraisal (information that is useful for self-evaluation).

Gerald Caplan (1974) used the term “support system,” and yet he did not expand on the structure of such systems, nor did he suggest how they develop or are maintained. He did note the importance of reciprocity and durability of relationships. Yet it was clear from his discussion that the support system was not limited to family and friends, but included mutual-aid groups, neighborhood-based informal services, and the aid provided by community caregivers such as the clergy. He elaborated on the kind of help the support system might provide, and suggested three main sets of activities: helping one mobilize psychological resources to manage emotional problems; sharing demanding tasks, and providing materials, money, skills, and guidance to help in dealing with specific stressors.

With support “strategically placed” in each of the settings where an individual spent time, he or she might be protected almost completely from the adverse effects of stress. Thus, Caplan emphasized the importance of support systems in protecting individual well-being in the face of everyday demands, situational crises, and life transitions. He also suggested the kinds of assistance provided by these systems, setting the stage for discussions of the proper scope and important types of support activities (Caplan, 1974).

Vaux (1988) wrote that numerous other researchers and commentators contributed to the shape of social support theory and research from the mid-1970s to the late 1980s (Dean & Lin 1977; Gottlieb 1981; Henderson 1977; Heller 1979; Hirsch 1979, 1980; Kaplan, Cassel, & Gore 1977; Mitchell & Trickett 1980; Tolsdorf 1976). Studies addressed the size and structure of social networks, the availability of confidantes, and satisfaction with different types of support. The networks of psychiatric, medical, and normal samples were compared. The relationship between psychological distress and social support (variously conceived and measured) was examined among samples experiencing some particular life transition or varying levels of

stressful life events. Over more than a decade, the major questions asked in social support research changed little, although they came to be asked with greater precision and sophistication.

Ten years later, Chan *et al* (2009) mentioned that social support was arguably one of the most popular psychosocial constructs. The groundbreaking work of physicians and social psychologists found that social support was an important factor in preventing illness and reducing mortality rates (e.g., Berkman & Syme, 1979; Caplan, 1974; Cassel, 1976; Cobb, 1976). Researchers have studied social support in the context of various health-related conditions (e.g. cancer, cardiovascular disorders, diabetes, multiple sclerosis, TBI, AIDS, infectious disease, and immune function), psychological disorders (e.g., depression, anxiety, schizophrenia, and addiction), life stressors (e.g., divorce, caregiving, and parenting), and personal relationships. Several of these studies have revealed significant relationships between social support and various health-related outcomes (Auslander & Litwin, 1992; Cohen, Doyle, Turner, Alper, & Skoner, 2003; Baron, Cutrona, Russell, Hicklin, & Lubaroff, 1990; House, Landis, & Umberson, 1988; Kiecolt-Glaser & Newton, 2001; Pierce, Lakey, Sarason & Sarason, 1997; Russell & Cutrona, 1991; Schwarzer & Leppin, 1992; Dilworth-Anderson, Williams & Cooper, 1999).

Vaux (1988) described how three scholars laid much of the groundwork for discussion and research of social support (Caplan 1974; Cassel 1974a, 1974b, 1976; Cobb 1976). One of these scholars, John Cassel (1974a, 1974b, 1976), an epidemiologist and physician, argued that psychosocial processes were of considerable importance in disease etiology, and that social support, in particular, played a key role in stress-related disorders. Cassel (1974b) was interested in understanding ecological findings linking noxious urban conditions, such as poor housing, crowding, and the disruption of neighborhoods, with higher rates of physical and psychological disorder, including infant mortality, tuberculosis, and psychosis.

Almost 30 years late, Kawachi and Berkman (2001) wrote that social support derived from social network was hypothesized to affect health in different ways. Social support could buffer the effects of stressful life events that otherwise would negatively affect physical and mental health. Furthermore, social support could create positive affective states, and supportive relationships, which in turn could provide individuals with access to positive social influences that could encourage healthy behaviors. This might explain why many studies have found that social support has protective effects on physical health outcomes, such as cardiovascular disease and mortality, and mental health outcomes, such as depression and anxiety (Berkman & Glass, 2000, Kawachi & Berkman, 2001; Noh & Kaspar, 2003).

Previous studies of the connections among social networks, social support, and health had identified aspects of network structure that influenced the social support received by individuals, their perceptions of the availability and adequacy of this support, and their mental health in routine and unusual settings—including hurricanes (Beggs *et al*., 1996; Berkman *et al*., 2000; Chan & Lee 2006: Fuhrer & Stansfeld 2002; Haines *et al*., 1999, 2002; House *et al*., 1988; Hurlbert *et al*., 2000; Kawachi & Berkman 2001; Lin *et al*., 1999; Peek & Lin 1999; Thoits 1995; Umberson *et al*., 1996; Wellman & Wortley 1989, 1990). These studies have confirmed the findings of numerous social support studies, including: (a) that better access to social support was associated with better health (House *et al*. 1988; Kawachi & Berkman 2001; Thoits 1995), and (b) that perceived adequacy of support was more consequential than received support for psychological wellbeing (Chan & Lee 2006; Thoits 1995; Turner 1994; Turner & Marino 1994).

Pearlin, Menaghan, Lieberman, and Mullan (1981) wrote that although, a number of scholarly efforts have sought to bring some clarity to an area surrounded by considerable ambiguity (Caplan & Killilea, 1976; Cobb, 1976; Brown, 1978; Mueller, 1979; House, 1981),

the term social support constitutes to reflect inconsistency in meaning and usage. Questions remain as to what constitutes a support system, what kinds of support can be drawn from the system, and what kinds of problems are amenable or resistant to reduction by supports. Indeed, although several studies show that support does modify the impact of stressful circumstances (e.g. Eaton, 1978; Gore, 1978; Lin *et al*., 1979; LaRocco *et al*., 1980), there is no clear understanding of the conditions that determine whether or not support will be effective (Lieberman & Mullan, 1978).

However, the majority of the studies on social support suggest that it is more likely to produce positive consequences on the health and well-being of the target population. It is a possible prediction that the availability of social support amongst homeless participants will have better health status.

Given this background on social support, it is important to consider how social support intersects with homelessness. There are some key studies, which are examined now.

Social Support and Homelessness

There are few studies on social support systems and social networks of the homeless people. In response to the growing societal concern about homelessness in recent years (Shinn, 1992; Toro & Warren, 1999), researchers have begun to explore the role that social support plays among homeless people. The studies completed so far have found that, relative to the non-homeless, many homeless adults have never been married. They typically have smaller social networks, and despite popular stereotypes of homeless isolation, most are in regular contact with at least some family members and friends (Bates & Toro, 1999; Cohen & Sokolovsky, 1989; Fischer & Breakey, 1986; Fischer, Shapiro, Breakey, Anthony, & Kramer, 1986; Letiecq, Anderson, & Koblinsky, 1998; Solarz & Bogat, 1990). A few studies have attempted to explore

the association between social support, and outcomes for homeless people. Although some have found a positive association, as was typically found in normative populations (those without mental illness and homelessness issues) (e.g., Drake *et al*., 1991; Rabideau & Toro, 1997), others have not (e.g., Calsyn & Morse, 1991; LaGory, Ritchey, & Mullis, 1990; Morse & Calsyn, 1986). Only two studies were located that explored the stress-buffering effects of social support among homeless people. Both found main effects of the social support, as well as stress-buffering effects (Bates & Toro, 1999; Schutt, Meschede, & Rierdan, 1994).

There is an increasing interest in the influence of social support on health outcomes among disadvantaged groups, and there is a modest body of research exploring the effects of social support on health among people experiencing homelessness. This research has found that social support was associated with lower rates of mental health problems, such as depression and suicidal ideation, fewer physical illness symptoms, decreased substance abuse, and less risky drug and sexual behavior among homeless individuals (LaGory *et al*., 1991; Calsyn & Winter, 2002, Bao *et al*., 2000, Nyamathi *et al*., 2000, Schutt *et al*., 1994, Nyamathi *et al*., 1993, Abdul-Quader *et al*., 1990, Toro *et al*., 2008, & Irwin *et al*., 2008). Other research has found that social support was related to higher levels of health and social service utilization among homeless persons (Lam & Rosenheck, 1999), and a small body of research has found that social support was negatively related to victimization while homeless (McCarthy *et al*., 2002, Wenzel *et al*., 2004, & Lam & Rosenheck, 1998).

Homeless individuals were often socially isolated, with low levels of social support and social functioning, and their lack of social resources contributed to their ill health (Khandor & Mason, 2007, La Gory *et al*., 1991, Fischer *et al.,* 1986, & Solarz & Bogat, 1990). It is essential to explore the relationship between social support, and social networks and health of homeless

individuals as a first step to find ways to improve the health outcomes.

Homeless women reported fewer supports and have been found less likely to use their support systems (Anderson & Rayens, 2004; National Center on Family Homelessness & Health Care for the Homeless Clinicians' Network, 2003). Yet some who experienced homelessness sought formal support when needed. The National Center on Family Homelessness and Health Care for the Homeless Clinicians' Network (2003) study reported 64% of homeless mothers were willing to seek help from family or friends, while 73% were willing to seek help from professional providers. Still, there was a wide gap between those who would seek assistance in stressful situations and whom they perceived that would be receptive to their request. Unfortunately, those in need might not feel comfortable in asking for help from social service professionals. Only 10 out of 100 homeless women felt they could contact a professional provider if they were depressed or needed advice, while similarly motivated contact with clergy, or community crisis lines were noted as 7% and 14%, respectively (p.15). Friends were the most likely contact with 33%, followed by parents 28%, and brothers or sisters (23%). It was important to note that partners or husbands were seen as a support for only 15% of the women in response to a question about asking for help in an emergency in the middle of the night, if they needed advice, or if they were depressed and needed support.

Holcomb (2009) conducted a qualitative, hermeneutic phenomenological study, asking the sub-population of homeless single mothers how they chose social supports for themselves and their families. A phenomenological design guided exploration of the social circumstances, and the holistic nature of the participants' experiences (Lindsay, 2006), thereby increasing understanding of the participants' interactions with their supports. Twenty-three homeless single mothers who lived in Sacramento County, California, who were over 18 years old, parenting

children, and not living in emergency housing shelters, were interviewed.

Despite the examples found elsewhere in the U.S., there were not many studies that examined these issues in Oahu. In general, studies showed that the homeless population had disabilities, both mental and physical issues, which needed attention. To what extent this is true for the Oahu population is unknown. It would be useful to know the perceived health status of people, according to the categories of race/ethnicity, gender, SES, age, participants with/without children, the Length of Homelessness (LOH), and the level of social support received. Such an ideal study would specifically examine the functional social support measures, that is, appraisal, tangible, self-esteem, and sense of belonging constructs utilized by the participants at the homeless shelters. This would give a good insight into how they ask for help, and whom they are considering to offer reliable resources, under stressful conditions. My study seeks to answer some of these questions.

Conceptual Framework

Many stressful experiences, it should be recognized, do not spring out of a vacuum, but typically may be traced back to surrounding social structures and people's locations within them. The most encompassing of these structures are the various systems of stratification that cut across societies, such as those based on race/ethnicity, gender, SES, age and participants with/without children. To the extent that these systems embody the unequal distribution of resources, opportunities, and self-regard, a low status within them may itself be a source of stressful life conditions (Pearlin, 1989). Along with the sociodemographic information, the Length of Homelessness (LOH) and the social support availability were added to examine the impact on the perceived health status of the sheltered residents.

Pearlin (1989) added that it was quite understandable that the community studies

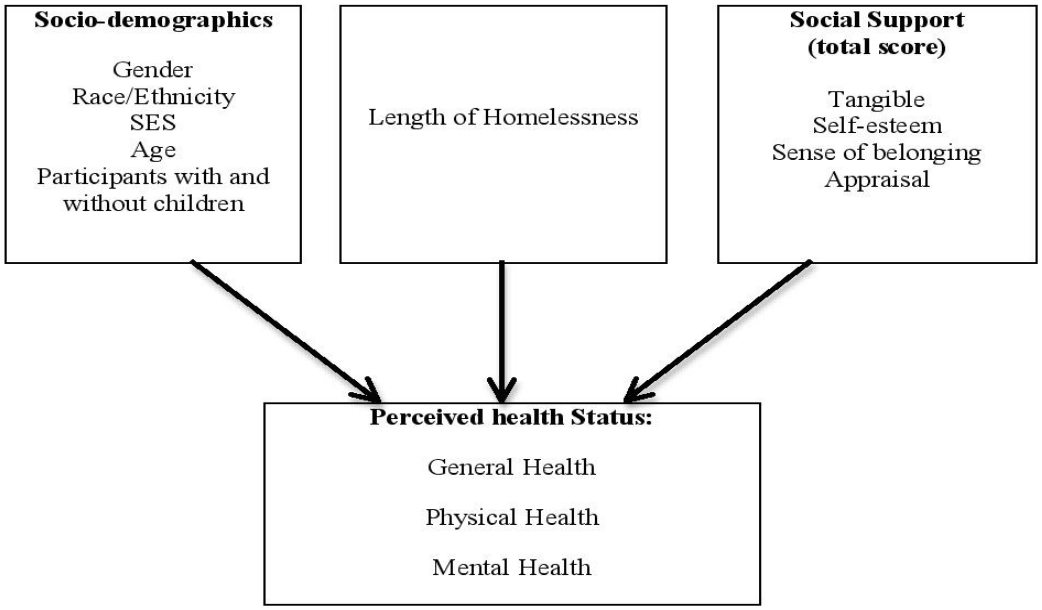
conducted in the 1950s and 1960s consistently revealed powerful associations between people's statuses in stratified systems and indicators of their well-being (Gurin, Veroff, & Feld, 1960; Hollingshead & Redlich, 1958; Srole, Langner, Opler, & Rennie, 1960). Interest in these statuses continued later years, particularly as evidenced by the explosion of literature examining gender and stress (Gore & Mangione, 1983; Kessler & McRae, 1981; Thoits, 1986).

Gender could be taken as an illustration because this was a status with a large research literature (Pearlin & Aneshensel 1986). First, gender was a characteristic that influenced the stressors to which people were exposed: women and men often experienced different stressful circumstances (Pearlin & Lieberman, 1978). In addition, even where exposure to stressors was similar for women and for men, the effects of these stressors on the outcomes may be conditioned by gender. Perhaps, for example, equivalent occupational hardships had different impacts on men and on women because of differences in the conditions that men and women faced in other roles (Pearlin, 1975a). (Pearlin & Schooler, 1978). Finally, gender was a characteristic that could affect the ways in which stress outcomes were manifested. Depressive symptomatology might be a more typical expression of stress among women, whereas drinking and other behaviors might be more typical among men (Aneshensel, 1988).

The present study includes sociodemographic variables such as gender, race/ethnicity, SES, age, and participants with/without children and other variables like the Length of Homelessness (LOH) and social support that are likely to impact the perceived health status of homeless participants (Figure 1).

In light of the literature review, the research question may be approached with greater sophistication, and it is restated here in this context.

Figure 1. Conceptual Framework



Research Question: How do sociodemographic characteristics (such as race/ethnicity, gender, SES, age and participants with and without children) and length of homelessness (LOH) together with social support impact perceived health status among people who are homeless on Oahu?

Thus, the extensive literature review of social support and health emphasized the need to explore the health status of the population living in homeless shelters. The importance of sociodemographic perspective coupled with the Length of Homelessness (LOH) and availability of social support will discover its effect on the health status of the sheltered participants.

Chapter 3. Research Methods

This chapter presents the research design, research questions, the sample, and its geographical location, the data collection and analysis procedures, and the ethical compliance and protection of human subjects. This quantitative study collected data about homeless adults, some of whom had children, who lived in Honolulu homeless shelters.

Research Methods and Design

This study used a cross-sectional design. Quantitative research methods were used to quantify relationships between variables. The primary data were collected, coded, categorized, and entered into the Statistical Package for the Social Sciences (SPSS), version 24 software program. The adult interviewees were from four homeless shelters on Oahu. Two of the shelters were located in the downtown areas of Honolulu. The other two facilities were located outside the urban core, in Waimanalo, and Kapolei. Since the collected data were from four different locations in Oahu, the results may be generalized to Oahu's sheltered homeless population, which will be discussed further below.

To explore the contribution of demographic factors, Length of Homelessness (LOH), and social support on perceived health status, bivariate, and regression models (ordinal logistic and negative binomial) were utilized to determine the outcomes. The four regression models were presented in the form as below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X + \beta_7 X_7$$

where X_1, X_2, X_3, X_4, X_5, X_6 and X_7 are explanatory variables respectively representing race/ethnicity, gender, age, socioeconomic (SES) index, participants with and without children, Length of Homelessness (LOH) and social support. β_0, β_1, β_2, β_3, β_4, β_5, β_6, β_7 are unknown parameters to be estimated through the regression models; and is a normally distributed error term reflecting the determinant of the outcome. The dependent variables (Y) measured the perceived health status and they were

Y = General health,

Y = Number of physically sick days,

Y = Number of mentally sick days

The coefficients of the independent variables β_1 through β_7 measured the responsiveness of the independent variables X_1 to X_7 on the perceived health status. SPSS, version 24 was used for the descriptive and inferential analyses.

Now that some information has been presented on the research design, it is useful to turn to the population that is the focus of this study. The homeless population has been discussed earlier in this work, but the discussion here focuses on those residing on Oahu, since this is the broader group from which a sample was selected for this project.

Population

For the past few years, Hawai`i has seen an alarming rate of homelessness compared to other states. Hawai`i Governor David Ige declared a state of emergency to deal with the state's homelessness crisis, just days after city and state officials cleared one of the nation's largest homeless encampments. The report stated that "Hawai`i saw a 23% increase in its unsheltered homeless population between 2014 and 2015, and a 46% increase in the number of unsheltered families." It added that "there were 7,260 homeless people in Hawai`i at the latest count,

meaning Hawai`i has the highest rate of homelessness per capita of any state in the nation" ("Hawai`i governor declares state of emergency", 2015).

This alarming information is buttressed by the latest Homeless Service Utilization Report: Hawai`i FY 2016 (2017), which showed that there were 14,015 homeless service users in FY 2016, compared to 14,954 homeless service users in FY 2015. There was a decrease of 6.3%, or 939 clients, which was attributed to more people leaving the homeless service system from FY 2015 (892 more "leavers"), a smaller number continuing to FY 2016 (220 fewer "stayers"), and less re-seeking homeless services after exiting the service system in a previous year (947 less "returnees") (Yuan & Gauci, 2017).

In the article, "Hawai`i Governor Declares State of Emergency Amid Homelessness Crisis" (2015), it was reported that though there is a decrease in numbers, these data showed a need to allocate more funds to expand services for homeless individuals and families. Organizations needing funds included the Housing First program, which provided homes and services to chronically homeless individuals, without requiring them to get sober or treat mental illness first, and programs that helped families to pay housing deposits and rent.

With all these issues swirling around the homeless issue in Oahu, it was clear that there were many ways that data could be collected. The challenge was how to do this in the best manner, given the goals of this study, and this is the focus of the next section.

Instruments

This quantitative research study utilized three instruments to examine the relationships between sociodemographic characteristics, Length of Homelessness (LOH), social support and perceived health status. The three instruments utilized were: the CDC Healthy Days Core measure (HDC), the Interpersonal Support Evaluation List (ISEL), and the Length of

Homelessness Survey (LOH). The Sociodemographic Form (SF) was added to collect sociodemographic information of the homeless clients. Two of the measures, specifically the Healthy Days Core (HDC) and Interpersonal Support Evaluation List (ISEL) had particular strengths related to their content and measurement approach. They were selected for their reliability and validity, their previous use with people with health disparities, and the homeless population. Plus, the measures had item clarity and brevity. Cronbach's alphas were determined for internal consistency reliability on both surveys. The Healthy Days Core (HDC) was feasible for surveillance, and was applied to different population subgroups. It was also relevant for public health program development.

Healthy Days Core survey (HDC). According to the CDC (2000), the Healthy Days Core **(**HDC) survey had been part of the full sample Behavioral Risk Factor Surveillance System (BRFSS) core since 1993, and was added, beginning in 2000, to the examination component of the National Health and Nutrition Examination Survey (NHANES). In recent years, several organizations have found these Healthy Days measures useful at the national level for: a) identifying health disparities, b) tracking population trends, and c) building broad coalitions around a measure of population health compatible with the World Health Organization's (WHO) definition of health. The WHO (1948) wrote that "health is a state of complete physical, mental, and social well-being – not merely the absence of disease, or infirmity."

One of the greatest anticipated uses of the BRFSS Healthy Days measures and data was at the state and local levels, in support of the two major goals of Healthy People 2010 (launched by the U. S. Department of Health and Human Services): a) Improving the Quality and Years of Healthy Life, and b) Eliminating Health Disparities. This validated measure and accumulating data gave states and communities a unique resource for tracking adult physical and mental health

over time, identifying unmet health needs, and guiding broad community efforts to improve population health. Measuring Healthy Days can help determine the burden of preventable disease, injuries, and disabilities, and it can provide valuable new insights into the relationships between the Healthy Days Core (HDC) measure and risk factors (CDC, 2000).

The Healthy Days Core (HDC) survey was taken from the Health-related Quality of Life (HRQOL) measure. The original HRQOL was comprised of 14 questions. However, this study used only the Healthy Days Core (HDC) survey, with three questions. The Healthy Days Core (HDC) survey is in Appendix B. The Healthy Days Core (HDC) survey measured the perceived heath status of the homeless population. This survey measured a person's perceived sense of well-being through three questions on: a) self-rated general health, b) the number of recent days when physical health was not good, and c) the number of recent days when mental health was not good. For this survey, "recent" was defined as during the past 30 days, and each portion of the survey measured different aspects of health. This survey had a retest reliability of 0.75 for self-rated general health, 0.71 for the number of recent days when physical health was not good, 0.67 for the number of recent days when mental health was not good (Andresen, Catlin, Wyrwich, & Jackson-Thompson, 2003).

The first item measured the overall self-rated general health on a Likert scale of excellent, very good, good, and fair to poor responses. The next two Healthy Days Core (HDC) questions estimated the number of recent days, when a person's physical and mental health was good (or better), and was calculated by subtracting the number of unhealthy days from a 30-day total (Hennessy *et al*., 1994). These summary measures were designed to assess people's overall perceptions about their health over time, and to identify groups in the general adult population with potentially unmet, perceived health needs (CDC, 2000).

The second Healthy Days Core (HDC) question was a global measure of recent physical symptoms, and the third Healthy Days Core (HDC) question was a global measure of recent mental and emotional distress. Physical and mental health questions were probed in separate questions in order to link quality of life measurement to the medical, mental health, and behavioral medicine fields.

Question 1 was a categorical variable, with Likert scale responses from 1 (excellent) to 5 (poor). On the other hand, questions 2 and 3 were continuous variables. The scoring was from 0 to 30 days in a month. A calendar was used to assist the participants in recording their sick days.

In conclusion, the Healthy Days Core (HDC) survey is a fairly quick one to complete, once the participant has spent the time needed to consider their health in the past month. In contrast, the Interpersonal Support Evaluation List (ISEL), considered next takes much longer to finish.

Interpersonal Support Evaluation List (ISEL). Interpersonal Support Evaluation List (ISEL). As this study is interested in the health outcomes of the homeless population, the Interpersonal Support Evaluation List (ISEL) was utilized. The Interpersonal Support Evaluation List **(**ISEL) is a 40-item questionnaire (Appendix C) that asks people to rate the perceived availability of different types of social support. The questions measure 4 different types of social support (i.e., tangible, appraisal, self-esteem, and sense of belonging). There is striking and consistent evidence for associations between social support and physical health, which is derived from social support studies. There is evidence that those who report that others will provide them with aid when they are in need are protected from the pathogenic effects of life stress (Cohen, 2004). This means that perceived emotional support protects against the increased risk for mortality, associated with high levels of stressful life events (Rosengren, Orth-Gomer, Wedel, &

Wilhelmsen, 1993), and work stress (Falk, Hanson, Isacsson, & Ostergren, 1992). There is also evidence for increased levels of perceived support delaying the progression of chronic life-threatening illnesses. For example, greater levels of perceived social support are associated with longer survival following heart attacks (Lett *et al*., 2005), and possibly with survival from breast cancer (Gidron & Ronson, 2008; Soler-Vila, Kasl, & Jones, 2003) and HIV-AIDS (Lee & Rotheram-Borus, 2001; Patterson *et al*., 1996). Presumably, this protective effect occurs because the perceived support reduces the stress associated with having a potentially fatal disease (Cohen & Janicki-Deverts, 2009).

The Interpersonal Support Evaluation List (ISEL) measure had proved equally valuable in a number of studies, including research with the homeless (Bates & Toro 1999), patients with epilepsy (Amir, Roziner, Knoll, & Neufeld (1999), the effect of advocacy intervention on mental health in women survivors of intimate partner (Tiwari, Fong, Yuen, *et al*., 2010), battered women (Bauman, Haaga, Kaltman, & Dutton, 2012), older adults (Sacco *et al*., 2010), and women experiencing abuse (Crane & Constantino, 2003). This measure was selected to assess the perceived social support availability of homeless people, who might have a group of family members and friends assisting them in finding housing and employment, and addressing health issues and intimate partner violence situations. The Interpersonal Support Evaluation List (ISEL) would also show if there was no social support for research participants.

All Interpersonal Support Evaluation List (ISEL) questions were on a Likert scale, ranging from completely true (A), somewhat true (B), somewhat false (C), completely false (D), and refused/don't know (E). The total Interpersonal Support Evaluation List (ISEL) score was utilized to measure social support items. Due to the multicollinearity problem of the IVs, the researcher did not use the sub-scales of the instrument. It was computed by taking the mean of

all non-missing items and then multiplied by the number of items (40) in the scale (Cohen, Mermelstein, Kamarck, & Hoberman, 1985). The score range was 105.35 with minimum at 46.00 and maximum score at 151.35. Items 3, 6, 9, 10, 11, 13, 14, 15, 17, 24, 25, 27, 28, 29, 30, 34, 35, 36, 39, and 40 were reversely scored. All scores were kept continuous.

In contrast to these other questionnaires, the Length of Homelessness (LOH) survey was shorter. It was developed to assess the time period of homelessness, which would likely affect health status. Further details about each of the questionnaires are now provided.

Length of Homelessness (LOH). The Length of Homelessness (LOH) survey was created to see whether a statistical relationship exists between health status and length of homelessness. Some studies showed that ethnic minorities (Washington, 2006; Yuan & Gauci, 2017), people in lower SES categories (Shinn & Gillespie, 1994), with mental health issues (Sullivan *et al*., 2000), criminal histories (Stein & Gelberg, 1995), substance abuse (Breakey & Fischer, 1990), and high-risk behaviors (e.g. sharing of needles, and bottles, and unprotected sex) (Klee, 1991) face serious challenges in getting housing because of their backgrounds. Thus, these people tend to be on the streets longer than those with fewer issues. It is likely that the lengthier the period of homelessness, the greater will be the exposure to harsh weather, stressful living conditions, and risky behaviors which is likely to have an impact on people's well-being.
The Length of Homelessness (LOH) survey was self-generated (Appendix D). It was a one-item survey asking for the participants' length of homelessness in months. The Length of Homelessness (LOH) survey was used as a predictor variable to explore the impact on the perceived health status in this study. The responses were kept as a continuous variable and recorded in months.

The Length of Homelessness (LOH) data was skewed. A Shapiro-Wilk's test was conducted. Log transformation using $\log_{10}(x)$ function was done before regression analysis. The transformed data showed significance level $p<.000$. In addition to the Length of Homelessness (LOH), research participants completed one more questionnaire. This survey asked about sociodemographic information, and this is discussed next.

Sociodemographic Form (SF). The sociodemographic form (SF) included questions about race/ethnicity, gender, SES, age and asked whether the participants lived in the shelters with or without their children. The form is attached (Appendix E). The race/ethnicity variable is a categorical variable with 4 groups: Native Hawaiians, Whites, Micronesians, and Asians and Others. The first 3 ethnic groups had enough participants to represent the respective groups. However, Asians and Others category was merged due to smaller representations of Asians (Japanese, Filipino and Chinese) and Others (Blacks, Native Americans, Latinos, and unknown). Gender has two categories: male and female. The SES was a composite variable, including income, employment, and education. SPSS was utilized to collapse these three categorical variables into a composite variable, SES. It is known that health status is related to socioeconomic status across the socioeconomic gradient; even among populations with relatively high socioeconomic status, the most advantaged have better health than the less advantaged (Macintyre, 1994). Age was kept as a continuous variable.

The participants with and without children variable was created with information collected on the participant's information on children (e.g. respondents with children, or without children). The information was collapsed into two categories: participants with children, and participants without children. The participants with/without children variable was created to examine the correlation between health and social support from children. This was deemed to be

useful because a three-generation North American longitudinal study showed that children's emotional and instrumental support has beneficial effects on the survival and psychological wellbeing of parents, particularly when the elderly experience widowhood or declining health (Silverstein, & Bengston, 1991; Silverstein, & Bengston, 1994). Other studies carried out in the U. S. found no link (Dean, Kolody, & Wood, 1990), or negative consequences between children's support and the morale and mental health of elderly parents (Mutran, & Reitzes, 1984; Markides, & Kraus, 1985).

A Shapiro-Wilk's statistic test was conducted for all sociodemographic variables. SES data was skewed. Data transformation was done using $\log_{10}(x)$ function and it was used to analyze the findings. The transformed data showed significance level $p<.000$.

In the case of all these questionnaires, it is important to consider whether they have demonstrated validity and reliability. Both are considered below, starting with validity.

Instrument Validity

The Healthy Days Core (HDC) survey has construct, criterion, and known-groups validity in a general population comparison with the widely used and validated Medical Outcomes Study Short Form 36 (SF-36) (CDC-MMWR, 1998b; Newschaffer, 1998; Moriarity & Zack, 1999). In that comparison, the individual components of the Healthy Days Core (HDC) summary index (recent physical and mental health) also displayed acceptable validity and correlated strongly with related SF-36 scales (Newschaffer, 1998). It was also reported that this summary measure is the most valid measure of a quality of life deficit in a mixed population of adults, with concurrent physical and mental health problems.

Statisticians know that the Health Days Core (HDC) survey is part of the HRQOL measure. The Short Form 36 (SF-36) was developed by the RAND Corporation during the

1980's, and widely used in clinical studies of HRQOL to measure the functional status and perceived well-being of a representative U. S. patient population. The SF-36, owing to its validity and reliability, is generally viewed as the criterion, or "gold standard" for measuring HRQOL (CDC, 2000).

In addition to this background, the Health Days Core (HDC) survey was chosen for this study because of its use in previous research with adults on the BRFSS (CDC-MMWR, 1994; Hennessey *et al*., 1994; CDC-MMWR, 1995; CDC-MMWR, 1998b; CDC-MMWR, 1998c; CDC, 2000).

As for Interpersonal Support Evaluation List (ISEL), Bates and Toro (1999) found that the Interpersonal Support Evaluation List (ISEL) subscales were associated with specific outcomes (e.g., symptoms of physical and psychological symptoms). Rogers, Anthony, and Lyass (2004) wrote that the Interpersonal Support Evaluation List (ISEL) has been subjected to extensive reliability and validity testing (Cohen *et al*., 1985), which has shown it to be internally consistent and valid with the general population (Brookings & Bolton, 1988; Schonfield, 1991). This survey has been used with homeless people (Roll *et al*., 1999; Toro *et al*., 1999). The total score has been found to be correlated with several measures of psychological health and physical symptomology.

While validity of research instruments is important, it is also key to consider their reliability. The next section covers this issue.

Instrument Reliability

Cronbach's alpha provided an estimate of internal consistency for the Healthy Days Core (HDC), and Interpersonal Support Evaluation List (ISEL) surveys. The alpha coefficient for the Healthy Days Core (HDC) survey was .783. The Interpersonal Support Evaluation List (ISEL)

survey had an alpha coefficient of .915. The sub-scales of Interpersonal Support Evaluation List (ISEL) had alpha coefficient of .551(tangible), .714 (self-esteem), .815(sense of belonging) and .714(self- esteem), Since the Length of Homelessness (LOH) was a 1-item survey, no alpha coefficient was available. In the case of the Interpersonal Support Evaluation List (ISEL) instrument, the four subscales had test–retest reliabilities of .71– .87 in various community samples (Cohen, Mermelstein, Kamarck, & Hoberman, 1985), and .62 to .85 in a sample of homeless and poor adults (Bates & Toro, 1999).

The readability statistics in MS Word for the Healthy Days Core (HDC) was grade level 7.9, grade level 4.4 for the Length of Homelessness (LOH), and grade level 6 for Interpersonal Support Evaluation List (ISEL). There were 51 participants (33.8%) with some college or more education, while 70 (46.4%) had high school diploma and 30 (19.9%) had less than high school education.

The next section describes the variables used in this study. There were three dependent variables and seven questions (independent variables) pertaining to perceived health status (Table 2). The three questions were on the general health, number of physically sick days (physical health), and number of mentally sick days (mental health).

Variables

Dependent variables. There were three dependent variables based on the Healthy Days Core (HDC) questions. The first dependent variable was on general health, and it asked “would you say that in general your health is excellent, very good, good, fair, or poor?” It is a reverse coded ordinal level variable, with responses ranging from excellent, very good, good, fair, and poor.

The second dependent variable was the number of physically sick days in a month. The question was “now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?” The minimum number of days in a month was 0 and maximum was set at 30. This variable was recorded as a continuous variable.

The third dependent variable was the number of mentally sick days in a month. The question was “now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?” The minimum number of days in a month was 0 and maximum was set at 30. This variable was coded as a continuous variable.

Independent variables. Length of homelessness (LOH), social support, and sociodemographic information were independent variables. The Length of Homelessness (LOH) was collected in months and coded as a continuous variable. The total social support score was collected and recorded as a continuous variable. Sociodemographic information on race/ethnicity, gender, SES, age, and participants with/without children were collected to show how these characteristics played a role in the health of homeless people. Race/ethnicity, gender and participants with/without children were coded as nominal, categorical variables. Age and SES were coded as continuous variables.

Now that the survey instruments and variables have been described, the next step is to consider how the data was collected, processed, and analyzed. This process took some time since it relied on the cooperation of Oahu shelter staff and the participation of shelter clients. This is described below.

Table 1. Variables

DVs:	Measurement	Response	Scale
General Health	Ordinal, Categorical	Likert scale	1. Excellent 2. Very Good 3. Good 4. Fair 5. Poor
Physically Sick Days	Continuous	No. of sick days past month	0 day (min); 30 days (max)
Mentally Sick Days	Continuous	No. of sick days past month	0 day (min); 30 days (max)
IVs:			
Race/ Ethnicity	Nominal, Categorical		1.Hawaiians; 2.Asian & Others; 3.Micronesians; 4.Whites
Gender	Nominal, Categorical		0 – Male; 1 – Female
Socioeconomic status (SES)	Continuous (composite variable of education, employment and income levels)	1) Education: a) less than High School b) High School c) some college or more 2) Employment: a) no job; b) part-time job; c) full-time job 3) Income: a) $0; b) $1 to $500 c) $501 to $1,000 d) $1,001 to $1,500 e) $1,501 to $2,000 d) $2,001 to $2,400	Levels 1 to 9: 1) 1 - 3 = $0 income + low education + no job 2) 4 - 6 = income (between $100 & $1,000) + low/some education + PT/FT job 3) 7 - 9 = income (between $1,001 & $2,400) + low/some education + FT job
Age	Continuous Nominal		Years
Participants with/without children	Categorical		1. With children 2. Without children
Length of Homelessness	Continuous		Months
Social Support	Continuous	Likert scale	Total scores of tangible, appraisal, self-esteem, and sense of belonging

Data Collection, Processing, and Analysis

Several different types of homeless shelters serve displaced people on Oahu. The programs included emergency service, transitional shelters, and outreach programs. The decision was made to focus on emergency shelters as they had similar admission criteria.

The next step was to gather information about each emergency shelter. The collected data included the number of adults served at each shelter, and information about them, such as family structure, sex, age, and race/ethnic groups. In addition, the operational hours of each shelter were investigated. After considering information about these organizations serving the homeless population, three organizations that served similar ethnic groups were selected.

The first selected organization was the Institute of Human Services (IHS). According to the IHS Hawai`i (2015), it is the oldest organization serving the homeless and has operated since 1972. IHS's mission was to "create and offer tailored housing solutions for those in crisis, and nurture homeless people toward greater self-direction and responsibility." It is also the largest homeless shelter in Hawai`i. Since 1972, IHS has become a fully-integrated homeless service provider, offering a variety of options, including case management, housing, employment, and two health and wellness centers at the Ka'aahi and Sumner shelters. It also provided homeless outreach services in Waikiki, Moilili, and the North Shore. At the time of the research, it hosted about 160 single men daily at its Sumner Men's Shelter. At the Ka'aahi Women and Family shelter, it served about 66 single women and 100 individuals in family groups (https://ihshawaii.org)

At IHS, the initial contact was with the Executive Director, Ms. Connie Mitchell, in March 2015. She answered questions about the number of residents served, the criteria for admission, shelter demographics, the rate of turn over, general information about health

conditions, and operational hours. Ms. Mitchell provided this information about the population at IHS's separate shelters for men, women, and families with children. This assistance was supplemented by meetings with IHS staff, who advised on the time availability of shelter residents.

The second important research contact was Ms. Michelle Im, the Outreach Manager of Waikiki Health Services. This meeting occurred in April 2015. Ms. Im also questioned the rationale of the project, its funding, potential partners or collaborators, the timeline, staffing demands, expectations about center support, and IRB approval. All of these questions were answered with the submission of a written proposal to the Research and Data Integrity Committee of Waikiki Health Services. This resulted in a meeting with Mr. Lambert Lum, Director of Shelter Services at Next Step Shelter (NSS) at Kaka`ako.

The third important connection was with the personnel staff at the Holomua Na `Ohana organization in April 2015. This organization ran two homeless shelters at this time. One shelter, named Weinberg Village, was located in Waimanalo. Ms. Holly Holowach was the Director of Weinberg Village, Waimanalo. The other shelter was Onemalu, located in Kapolei. A meeting with its director, Ms. Nalani Tomei, occurred at Onemalu. Once again, information was provided about the research project. A few weeks later, the Board of Directors of Holomua Na `Ohana approved the agency's participation in the research project. Not only did the Board approve the project, but also meetings occurred with the residents at both shelters, in order to answer questions about the project. Many of the homeless clients were willing and excited to participate in the study.

Sample

The inclusionary criterias for participants were a) they have to be at least 18 years or above, b) living in 1 of 4 shelters and c) meet at least 85% complete data requirement. Convenience sampling was utilized in this research. The participants voluntarily participated, and their confidentiality was assured. The sample size of 151 was determined using the G*Power 3.1 software program. There were a total of 155 people who participated in this study. However, 4 participants had more than 15% missing data and did not meet the inclusion criteria. Overall, there were 151 participants who participated in this research. So, the participation rate was 0.97% (151/155 participants). With 7 predictors, race/ethnicity, gender, age, SES, participants with and without children, Length of Homelessness (LOH), and social support, the significance level (alpha level) was set at .05, accompanied by a confidence level (margin of error) +/- 5, power 0.8, and effect size at 0.1.

Program staff at the four homeless shelters assisted in recruiting 151 participants for the study. Recruitment flyers were posted at the shelters, with information about the study objectives and criteria, along with contact phone numbers and email addresses of the researcher and her advisor. A sign-up sheet was also provided for interested participants to indicate the time and day they were available. The shelters were open daily so research meetings occurred throughout the week.

The surveys were administered by the interviewer at the four homeless shelters, from August to December 2015. The collected data included the following independent variables for analysis: race/ethnicity, gender, SES, age, participants with/without children, the Length of Homelessness (LOH), and social support. Three surveys (HDC, ISEL, LOH) and a SF were given to the respondents. The Healthy Days Core (HDC) covered perceived health status, and

included questions about general health, the number of physically sick days, and the number of mentally sick days as outcome variables. The Interpersonal Support Evaluation List (ISEL) explored perceived social support, with included questions about tangible social support, appraisal of social support, self-esteem, and sense of belonging.

The final form, the SF recorded demographic information such as race/ethnicity, gender, age, SES, and participants with/without children. The SF and other surveys were administered in an office, provided by the organizations. This private space helped to protect participants' privacy. Homeless shelter residents seemed to be comfortable and at ease as they were used to the office setting.

Each respondent received a $10 gift card as compensation for participating in this research. The gift cards came from various stores such as Walmart, K-Mart, Tamura's, and Jack in the Box. Gift cards were provided at each shelter to fit with the local convenience stores, so participants could actually use the items.

The shelters had language interpreters that were available to assist when surveys were administered to non-English speaking people, such as Micronesian clients. However, all of the interviewees spoke simple English and were able to understand the survey questions without interpreters. Everyone received consent forms, which were explained carefully. After dealing with the consent forms, survey administration took about 45 minutes to an hour. Some people wanted a ten-minute break during the interview.

After the surveys were completed, they were checked carefully, and entered into SPSS. They were checked again for accuracy. When computing scales, the program required that participants have at least 85% of the data for that scale. This included "refused/don't know" responses for both surveys. For missing values, SPSS allows the user to define the missing value.

This was left “blank” during data entry. Then, under the “missing data” option, SPSS was instructed to consider everything that was “blank”. So, these gaps in data were not included in the calculations of correlation coefficients, and also not included in the same size “n” for that particular data point. Though there was no missing data for 151 valid cases, it showed 1 system missing value for a social support score.

After data entry, and careful checking of the information, ordinal logistic and negative binomial regression models were utilized for data analysis. The first question on general health had 5 ordinal, categorical responses varying from excellent, very good, good, fair, and poor. Ordinal logistic regression was used to analyze the first model. The subsequent second, and third questions asked about the number of physically and mentally sick days. These open-ended questions asked about the number of sick days. When univariate analysis was conducted, it showed over-dispersion of data for the two models. As a result, negative binomial regression was utilized to analyze the second and third models.

During the entire process of data collection, processing, and analysis, the study followed appropriate ethical protocols for research with human subjects. Ethics are covered in the next section.

Ethical Assurances

The University of Hawai`i at Mānoa’s Institutional Review Board (IRB) approved this project (Appendix A). The study involved minimal risk, and there was no personally identifying information on the paperwork (apart from the consent form), and in the collected database. Participants were assured of confidentiality when they took part in the project. This was to protect the homeless participants who were considered to be a vulnerable group, according to the IRB. In addition to the IRB requirements, the National Association of Social Workers (NASW)

2016 Code of Ethics was used as a guide in this study (http://socialworkers.org/pubs/code/code.asp). Sections of the ethical code encourage researchers to preserve the welfare of the participants, maintain professional standards, promote integrity within investigative practices, act fairly and without biases, and maintain the rights, privacy, and confidentiality of participants.

Specific information about how the study followed these guidelines is now provided. Regarding informed consent, clear and simple language was used to inform clients about the purpose of the study, and that there were no risks involved during the research. Also, the participants had the right to refuse or withdraw consent anytime during the interview. The informed consent process ensured that the participants agreed, free from coercion, to participate in the study (Zikmund *et al*., 2010). There were no conflicts of interest as there was no direct contact with the participants, other than the research meeting itself. No one from the university directly benefited from the study.

Ethical codes are designed to protect both the researcher and the study participants with the emphasis on protection of participants. At this stage, it is useful to provide some information about those who consented to take part in this project.

Participants

There were 151 respondents from four homeless shelters: the Institute of Human Services (IHS) Shelter, the Next Step Shelter (NSS), the Weinberg Village Waimanalo (WVW), and the Onemalu shelters. The study focused on individuals who were 18 years and older. The sample included 84 male participants and 67 females. The average age of the participants was 43.85 years old. The range was 58 years with the youngest participant aged 19 and the oldest aged 77. The median age was 44 (Table 1).

It is valuable to compare information about the study participants with information about the Hawai`i homeless population as a whole. As shown in the Hawai`i Homeless Service Utilization Report FY 2016 (2017), Oahu's homeless population, and the sample of this study seem to have somewhat similar characteristics. It suggests that the Oahu sample may be somewhat characteristic of the state's sheltered homeless population assisted by the state and service providers. This would buttress the contention that both studies gathered a somewhat representative group of sheltered homeless for the administration of their surveys or, at least, that both studies contained similar flaws.

Table 2. Descriptive Statistics

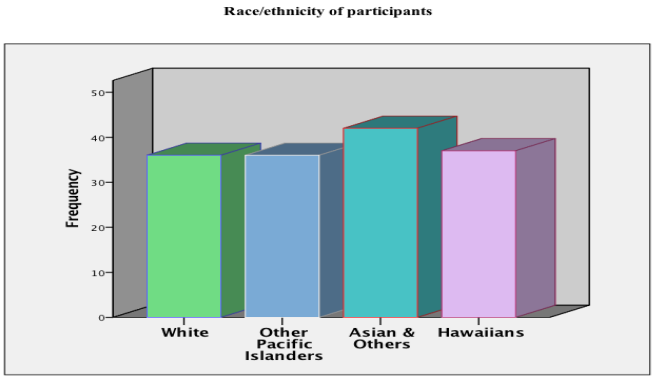
		Race/ Ethnicity	Gender	SES	Age	Participants with/without children
N	Valid	151	151	151	151	151
	Missing	0	0	0	0	0
Mean		3.81	.44	3.13	43.85	4.03
Median		3.00	.00	2.00	44.00	3.00
Mode		2	0	2	-	1[a]
Std. Deviation		2.821	.498	2.067	-	2.771
Variance		7.956	.248	4.271	197.97	7.679
Range		11	1	8	58	9
Minimum		1	0	1	19	1
Maximum		12	1	9	77	10

Note: Socioeconomic status (SES).

First of all, race/ethnicity was considered in this project. These categories included: White, Hawaiian, Micronesian, Other Pacific Islanders, Asian, Black, Native American, and unknown. Due to the small representations of certain ethnic groups, some categories were grouped together (Fiedler, Unkelbach, and Freytag, 2009). Asian, Black, Native American, and unknown were

grouped as Asian and Others. As a result, there were 37 Hawaiians, 36 Whites, 36 Micronesians, and 42 Asians and Others (Figure 2).

Figure 2. Race/Ethnicity



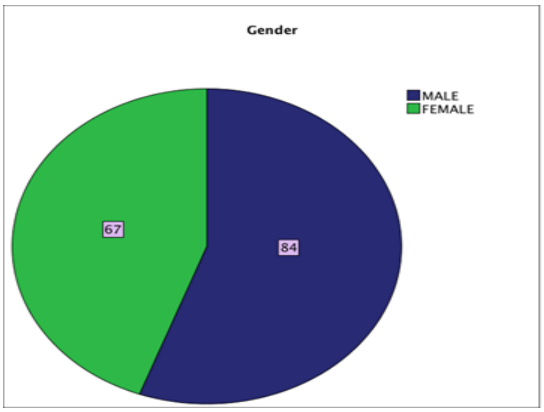
This data may be compared with the Oahu's sheltered homeless population (Yuan & Gauci 2017) that also had Hawaiians as the biggest ethnic group, with 1,538 (29.7%) people in homeless situations. The next largest ethnic category was Whites with 1,123 people (21.7%), followed by Micronesians with 701 people (13.5%), and the Other Pacific Islanders with 385 people (7.4%). The rest of the ethnic groups included the Marshallese with 311 people (6.0%), Blacks with 306 people (5.9%), Filipinos with 278 people, (5.4%), Other Asians with 248 people (4.8%), Unknown category with 216 people (4.2%), and Native Americans with 74 people (1.4%). These results on Hawaiians and Whites are quite similar to the race/ethnic results of the Oahu research. On other hand, the pan-Hawai`i study reported that the Asians and Others category (made up of Other Asian, Filipino, Black, Native American and unknown categories had only 1,122 (21.7%) people. This Oahu research had 42 people who fit the Asian and Others category. This was so because small representations of Asians, Blacks, Native Americans and unknown groups were combined together.

When a small number of participants are grouped in "Other" category, the information on

specific ethnic groups disappeared. When interpreting results, it is not possible to give information about certain groups. The information and ethnic identity are lost. In this study, "Others" were grouped with Asians (23 participants) due to smaller representations. The "Other" category included Black, Hispanic, Native American, Tongan, Samoan and Unknown.

The Homeless Service Utilization Report Hawai`i FY 2016 (2017) showed that there were more homeless males (2,938; 56.7%) than females (2,223; 42.9%) in Oahu's homeless shelters (Yuan & Gauci, 2017). Somewhat similar gender ratios were identified in this research with more men (84; 55.6%) than women (67; 44.4%) among the homeless participants (Figure 3.)

Figure 3. Gender



In the Oahu study, the three categorical variables (employment, income, and education) were collapsed into a socioeconomic (SES) index (Hollingshead, 1957; Hollingshead & Redlich, 1958; White, 1982) to eliminate multi-collinearity issues. SPSS was used to create a composite variable, the SES index.

Each of the variables, which make up the SES index, is examined in turn. The employment variable had three categories: unemployed, employed (part-time), and employed (full-time). Employment totals showed that 114 (76%) were unemployed, 15 (9.9%) had part-

time employment, and 22 (14.6%) had full-time employment. Income had six monthly income categories: 0 = $0; 1 = $1 to $500; 2 = $501 to $1,000; 3 = $1,001 to $1,500; 4 = $1,501 to $2,000 and 5 = $2,001 to $2,400. When the income variable was analyzed, the results showed that 114 (76%) had no income, 10 (6.6%) earned less than $500, 9 (6%) earned between $501 and $1,000 dollars per month. About 11 participants (7.3%) earned between $1,001 to $1,500, and 6 participants (4%) made between $2,001 to $2,500 dollars a month.

Employment information was charted in categories, and the same occurred for education. This variable had three categories: less than high school, high school, and some college or more. There were 30 (19.9%) with educations lower than high school, 70 (46.4%) with high school educations, and 51 (33.8%) with some college or more education.

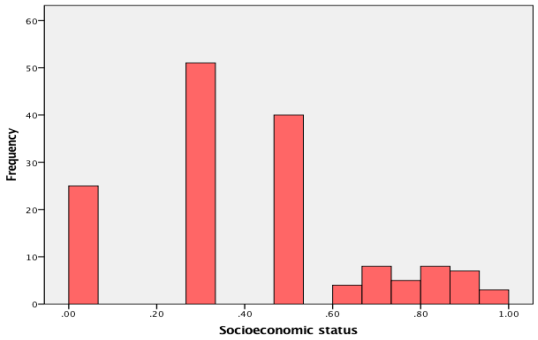
All of these variables, employment, income, and education were coded as categorical variables. SPSS s was used to create a composite variable, called the socioeconomic index (SES) (Figure 4). A test of normality using Shapiro-Wilk's W statistic was utilized for SES. The test results showed that this variable was statistically significant at $p < .000$ level. The data transformation was conducted using $\log_{10}(x)$ function and the Shapiro-Wilk's W statistic was again conducted and it showed that the two Healthy Days Core (HDC) dependent variables were still statistically significant $p < .000$ level.

The SES index ranges from 1 (the lowest) to 9 (the highest). The SES index indicators were levels of 1 to 3 ($0 income + low education + no employment), 4 to 6 (income between $100 and $1,000 + low/some education + PT/FT employment), 7 to 9 (income between $1,001 and $2,400 + low/some education + FT employment). More than three-quarters (116; 77%) of the 151 participants reported living in SES index 1, 2, and 3 (low SES). The SES index 1, 2, and 3 were made up of participants with no income, low education, and no employment. For

comparison purposes, it is unfortunate that there is no SES data available in the Homeless Services Utilization Report Hawai`i 2016.

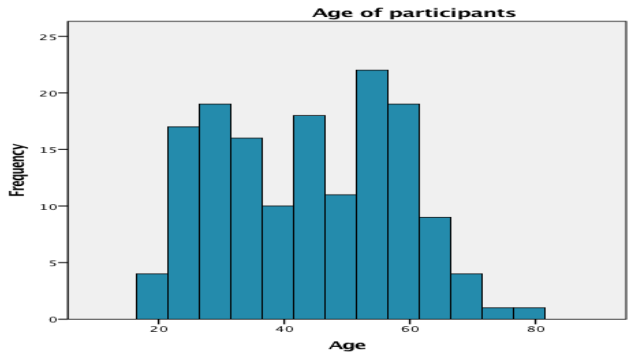
In the Homeless Service Utilization Report, there were 375 (7.2%) in the 18 to 24 years category, 1,268 (24.5%) in the 25 to 39 years one, 1,457 (28.1%) in the 40 to 59 years group, and 468 (9.0%) in the 60 years and over age category (Yuan, & Gauci, 2017). In contrast, the Oahu research measured age as a continuous variable, and there were no categories created for the analyses. However, if similar age categories were calculated, then the results would have been 13

Figure 4. Socioeconomic Status (SES)



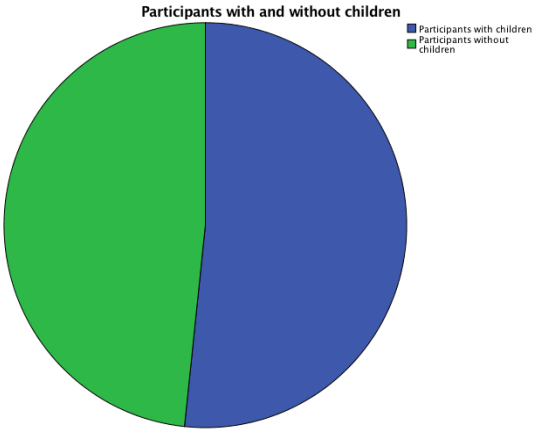
(8.6%) people in the 18 to 24 years group, 50 (33.1%) in the 25 to 39 years one, 63 (41.7%) in the 40 to 59 years cluster, and 25 (16.5%) in the 60 years and over category (Figure 5). The results in age were representative of Oahu's sheltered homeless population as reported in Hawai`i Homeless Utilization Report FY 2016 (Yuan & Gauci, 2017) meaning that the smallest age group was 18 to 24 years with 13 (8.6%) people, followed by 25 (16.5%) people in 60 years and over category. The 40 to 59 years group had the highest number of 63 (41.7%) people followed by 50 (33.1%) in the 25 to 39 years category. Thus, the age results of this research are similar to the results found in the census of the Oahu's sheltered homeless population.

Figure 5. Age in years



While age is important, this study is also concerned with relationships. The participants' information on the absence/presence of children data were used to form the participants with/without children variable. This variable had two categories: participants with children and participants without children. Children can be seen as a source of stress and/or as a social support. The presence of children has been used to make inferences about chronic stress (Gove, 1972; Radloff, 1975; Gove & Geerken, 1977; Aneshensel *et al*., 1981), and yet, they are also a source of social support (Aneshensel, 1992). There were 78 (51.7%) participants with children, and 73 (48.3%) without children. There were 5 (3.4%) more homeless participants with children compared to participants without children (Figure 6). Comparatively speaking, the Homeless Service Utilization Report Hawai`i FY 2016 showed that there were 640 (21.5%) in a household with children, and 2,330 (78.5%) living alone/in an adult only household (Yuan & Gauci, 2017). Across Oahu, there were 1,690 (57%) more homeless people living alone, or in an adult only household compared to households with children.

Figure 6. Participants with and without children



The other two independent variables were the Length of Homelessness (LOH) and social support (ISEL). The Length of Homelessness (LOH) had skewed data, so Shapiro-Wilk's W statistic test was used for Length of Homelessness (LOH). The test results showed that it was statistically significant at $p < .000$ level. The log transformation ($\log_{10}(x)$ function) was conducted, and the Shapiro-Wilk's W statistic test was again conducted, and it showed that this variable was statistically significant $p < .000$ level.

The Length of Homelessness (LOH) had a *mean* of 23.08 months, a median 14 months, and a mode 24 months (Figure 7). The *SD* was 29.74 and variance of 884.91. The *mean* score of ISEL was 85.35, median of 84.05 and mode of 61 (Figure 8). The *SD* was 21.75 and had a variance of 473.06. The total Interpersonal Support Evaluation List (ISEL) scores ranged from 46 to 151. The total ISEL score was computed by taking the mean of all non-missing items and then multiplied by the number of items (40) in the scale (Cohen, Mermelstein, Kamarck, & Hoberman, 1985).

Figure 7. Length of Homelessness (LOH) in months

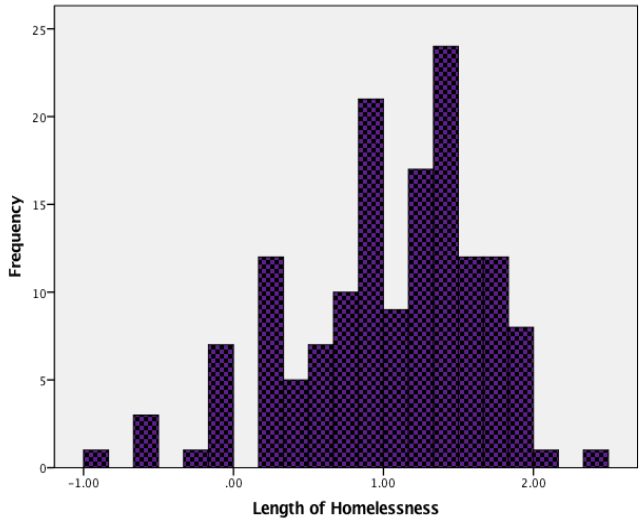
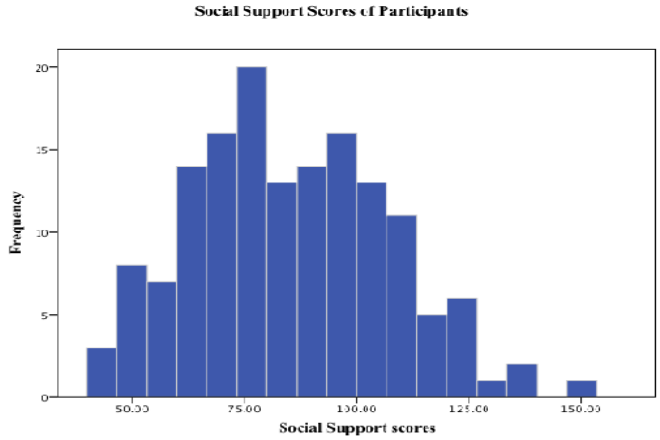


Figure 8. Social Support



Every study has limitations because no project is entirely without flaws. This research is not an exception, and the attention now focuses on this matter.

Limitations

This research interviewed only men and women, and did not include transgendered participants, due to the small sample size of this group. An additional limitation is that it surveyed participants in homeless sheltered programs, and did not include outreach program

participants. This study was confined to adults, and did not include children, and adolescents who were homeless. Also, the project focused on homeless people living in the City and County of Honolulu, and not the neighboring islands of Hawai`i. Therefore, the findings were limited to the island of Oahu.

There also may be limitations in terms of the type of data gathered. In the case of this study, the Interpersonal Support Evaluation List (ISEL) only examined the functional aspects of social support. It did not include structural aspects, such as social network size, frequency of contacts, and satisfaction levels. Only a certain amount of data can be gathered in a cross-sectional designed study, with 151 participants. If more funds, a longer time frame, and more participants were available, the study could have been longitudinal, which would have allowed for more information to be gathered on social support and health disparities.

Also, the DVs for models 2 and 3 were correlated and the regression models cannot be seen as independent from other another. Though the questions asked were different and asked about the number of physically sick days and the number of mentally sick days in the 30 days, the correlation was present. These two questions could be further different by asking about the specific mental health illness/disorder present in the participants and taking prescribed medication. It could have given more details of the illnesses experienced by the participants.

Chapter 4. Analysis and Results

This chapter presents the results of the data analyses, including univariate and bivariate analyses, along with ordinal logistic regression and negative binomial regression. These statistical procedures were applied to the data collected for this study involving participants with and without children, who lived in Honolulu County homeless shelters.

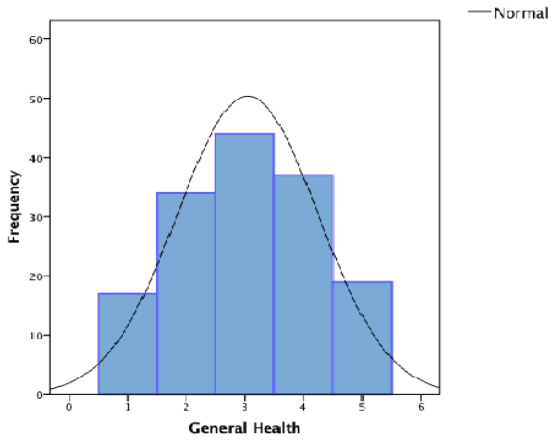
In the next section, the univariate results are presented commencing with a consideration of the general health of the participants.

Data Analysis

Univariate results

General Health. Univariate analysis of the dependent variables was used to determine the type of regression for three models (Figures 9 to 11). The general health question had 17 participants (11.3%) reporting excellent, 34 (22.7%) very good, 44 (29.3%) good, 36 (24.0%) fair, and 19 (12.7%) with poor responses. It had a normal distribution curve (Figure 9). With 151 observations, the *mean* of general health was 3.05, *SD* 1.19, mode 3, median 3.00, and variance at 1.43. The highest percentage (29.3%) showed that the average of the general health response was ‘good’. This information was important and gave an understanding of the general health status of Oahu’s homeless population. The finding was somewhat surprising given the extensive literature showing that the homeless population has a high prevalence of physical and mental health illnesses.

Figure 9. General Health



The general health had ordinal responses. Therefore, ordinal logistic regression was used to analyze the results. Four assumptions were tested to ensure ordinal logistic regression is appropriate for the general health data (model 1). Assumption 1 was to have an ordinal dependent variable. The general health responses were Likert scaled items 1 to 5, ranging from excellent to poor responses. Assumption 2 was to have 1 or more independent variables at continuous or categorical levels. Age, and the Length of Homelessness (LOH) were continuous variables. Race/ethnicity, gender, SES, and participants with/without children were categorical variables. Assumption 3 was to ensure that there was no multicollinearity. Various recommendations for acceptable levels of variance inflation factor (VIF) appear in the literature. Most commonly, a value of 10 has been recommended as the maximum level of VIF (e.g., Hair, Anderson, Tatham, & Black, 1995; Kennedy, 1992; Marquardt, 1970; Neter, Wasserman, & Kutner, 1989). A coefficients table (Table 3) showed VIF for independent variables were less than 10: the lowest was 1.02 and the highest was 1.36. Assumption 4 was to ensure that model 1 has proportional odds. Table 4 showed that the test of parallel lines was .132 and failed to reject the null hypothesis.

Table 3. Coefficients[a] Table

	Collinearity Statistics	
Model 1	Tolerance	VIF
Race/Ethnicity	.949	1.053
Gender	.938	1.066
SES	.732	1.366
Age	.794	1.259
Participants with/without children	.973	1.028
Length of Homelessness	.812	1.231
Social Support	.956	1.046

a. Dependent Variable: General Health

Table 4. Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Null Hypothesis	428.461			
General	393.184[b]	35.277[c]	27	.132

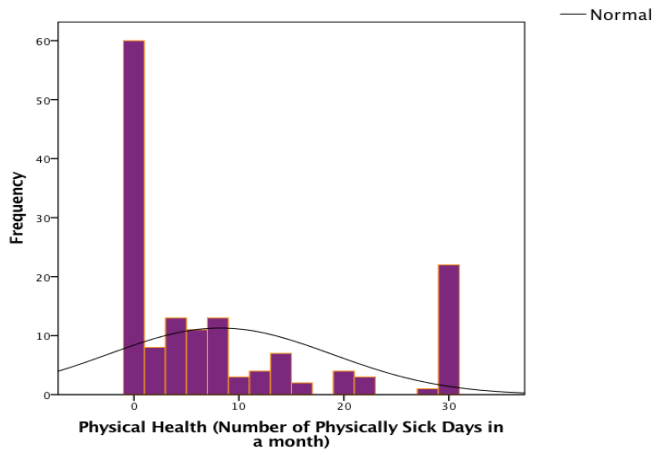
The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Now that the analysis dealing with the participants' general health has been covered, attention will turn to several more specific variables: physically sick days and mentally sick days. These will be dealt with in turn, commencing with physically sick days.

A test of normality using Shapiro-Wilk's W statistic was utilized for the Healthy Days Core (HDC) dependent variables of model 2 and 3. The test results showed that the two Health Days Core (HDC) dependent variables were statistically significant at $p < .000$ level. This meant that the data were non-normalized data sets. The variable transformation ($\log_{10}(x)$ function) was conducted and the Shapiro-Wilk's W statistic was again conducted and it showed that the two Healthy Days Core (HDC) dependent variables were still statistically significant $p < .000$ level.

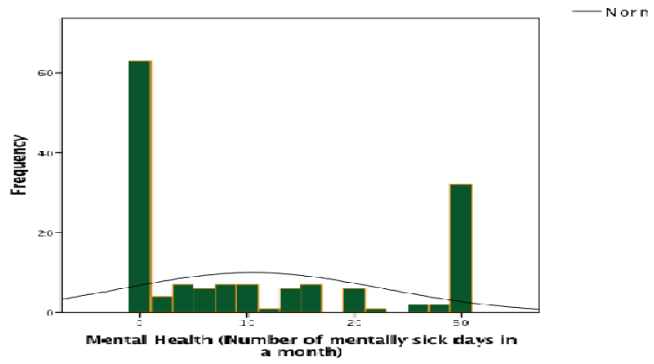
Physically Sick Days. The *mean* for the number of physically sick days was 8.21, *SD* at 10.67, median at 3, and mode at 0 days. The variance was 113.99, range 30, with minimum at 0, and maximum at 30. This variable was widely dispersed (overdispersed), as shown in Figure 10. When the response variance is greater than the mean, the data is widely dispersed or overdispersed (Hilbe, 2011). The number of physically sick days' variance was greater (113.99) than the *mean* (8.21). This variable was analyzed using negative binomial regression.

Figure 10. Number of Physically Sick Days



Mentally Sick Days. The frequencies for the number of mentally sick days showed that the *M* was 10.53, *SD* at 12.07, median 5.00, and mode at 0 days. The variance was at 145.90, range of 30, with minimum at 0, and maximum at 30. The univariate result showed that the number of mentally sick days' variance was greater (145.90) than the conditional *mean* (10.52). The data was widely dispersed (overdispersed) as shown in Figure 11. Based on this analysis, negative binomial regression was used to analyze model 3.

Figure 11. Number of Mentally Sick Days



The univariate analyses were only the first steps in the examination of the data followed by bivariate analyses, which are covered below.

Bivariate results

Bivariate analysis was utilized to test the strength of the relationships between the dependent variables and independent variables (Tables 5 to 7). A Chi-Square test of independence, one-way ANOVA and Pearson correlation were conducted to evaluate the relationships between variables (N = 151).

General Health. To test whether proportions were different in each predictor variable in Model 1, the chi-square test of independence was used (Table 5.), with p value = .05 as the criterion for significance. The results were similar for male and female participants in terms of their general health. According to the $\chi 2$ test of independence, the difference was not statistically significant, $\chi 2(4, N = 151) = 6.13$, $p = .190$, the inference is that men and women were similar in general health status.

The $\chi 2$ test of independence for age indicated that the difference was not statistically significant, $\chi 2(196, N = 151) = 194.85$, $p = .510$, so it is inferred that the different aged groups were similar in their general health status.

Table 5. Chi-Square of Independence for general health variables *(N = 151)*
Chi-Square Tests for General Health variables

	Value	Df	Asymptotic Significance (2-sided)
Race/Ethnicity	26.372	12	.010
Gender	6.132	4	.190
SES	35.225	32	.318
Age	194.856	196	.510
With/without children	15.522	4	.004
Length of Homelessness	183.295	192	.662
Social Support	353.218	344	.354
N of Valid Cases	151		

In the case of ethnic groups, there was a different pattern of results. When ethnic groups were tested, a lower number of Micronesians had poor health scores (n_o = 1) than was expected (n_e = 4.5), and a higher number of Micronesians had excellent health scores (n_o = 10) than was expected (n_e = 4.1). According to the $\chi 2$ test of independence, the difference was statistically significant, $\chi 2(12, N = 151) = 26.37$, $p = .010$, so the inference could be made that Micronesians were more likely to have better general health status.

When $\chi 2$ test of independence was conducted for SES, the difference was not statistically significant, $\chi 2(32, N = 151) = 35.22$, $p = .318$, allowing for the inference that the different SES groups were similar in terms of the general health status of the participants. In contrast to the uninteresting SES results, there were a higher number of families without children that indicated poor health scores (n_o = 13) than was expected (n_e = 9.2), but a lower number of families without children indicated excellent health scores (n_o = 4) than was expected (n_e = 8.2). According to the $\chi 2$ test of independence, the difference was statistically significant, $\chi 2(4, N = 151) = 15.52$, $p = .004$, so it could be inferred that the families without children were more likely to have poorer general health statuses.

The $\chi 2$ test of independence for Length of Homelessness (LOH) indicated that the difference was not statistically significant, $\chi 2(192, N = 151) = 183.29$, $p = .662$, and it could be inferred that people with different lengths of homelessness were similar in their general health status. Lastly, according to $\chi 2$ test of independence for social support, the difference was not statistically significant, $\chi 2(344, N = 151) = 353.21$, $p = .354$, supporting the inference that the groups with different social support scores were similar in terms of the general health status of the participants.

Physically Sick Days. The one-way ANOVA was conducted on categorical variables for Model 2 (Table 6). The one-way ANOVA for gender indicated that the difference was not statistically significant, $F(1, 149) = .082$, $p = .775$, therefore it could be inferred that men and women were similar in the number of physically sick days. Next, the one-way ANOVA for race/ethnicity indicated that the difference was statistically significant, $F(3, 147) = 4.002$, $p = .009$, leading to the inference that different ethnic groups were not similar in the number of physically sick days. The finding on SES indicated that the difference was not statistically significant, $F(8, 142) = 1.379$, $p = .211$, meaning that the different SES levels were similar in the number of physically sick days. Lastly, according to the one-way ANOVA for participants with/without children, the difference was statistically significant, $F(1, 149) = 7.885$, $p = .006$, supporting the inference that there was a difference between families with children and families without children.

Table 6. One-way ANOVA for Physically Sick Days variables *(N = 151)*

Race/Ethnicity

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1291.111	3	430.370	4.002	.009
Within Groups	15807.525	147	107.534		
Total	17098.636	150			

Gender

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	9.437	1	9.437	.082	.775
Within Groups	17089.198	149	114.693		
Total	17098.636	150			

Socioeconomic status (SES)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1232.420	8	154.053	1.379	.211
Within Groups	15866.216	142	111.734		
Total	17098.636	150			

Participants with and without children

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	859.347	1	859.347	7.885	.006
Within Groups	16239.289	149	108.989		
Total	17098.636	150			

Pearson correlation coefficients were computed for the continuous variables in Model 2 (Table 7). Using the Boniferroni approach to control for Type I error across the correlations, a *p* value of less than .008 (.05/6 = .008) was required for significance. The results of the correlational analyses showed that 4 out of 6 correlations were statistically significant and were greater than or equal to .21. The correlation of the number of physically sick days with the other independent variables tended to be lower and not significant. There was significant evidence to conclude that there was a weak, positive association between physically sick days and age, r = .21 ($p < .01$). So, an increase in age was associated with a higher number of physically sick days. Also, there was a weak, positive association between physically sick days and social support, r = .26 ($p < .01$). This indicated that as the level of social support increased, it was more likely to

increase the number of physically sick days. In general, the results suggested that the number of physically sick days was positively associated with age and social support.

Table 7. Pearson Correlations for Physically Sick Days variables *(N = 151)*
Pearson Correlations for Physically Sick Days

		Age	LOH	Social Support	No. of Physically Sick Days
Age	Pearson Correlation	--			
	Sig. (2-tailed)				
	N	151			
LOH	Pearson Correlation	-.294**	--		
	Sig. (2-tailed)	.000			
	N	151	151		
Social Support	Pearson Correlation	.238**	-.002	--	
	Sig. (2-tailed)	.003	.978		
	N	150	150	150	
No. of Physically Sick Days	Pearson Correlation	.216**	.044	.269**	--
	Sig. (2-tailed)	.008	.588	.001	
	N	151	151	150	151

Note: LOH is Length of Homelessness. **. Correlation is significant at the 0.01 level (2-tailed).

Mentally Sick Days. The one-way ANOVA was conducted on categorical variables for Model 3 (Table 8). According to the one-way ANOVA for gender indicated that the difference was not statistically significant, $F(1, 149) = 1.089$, $p = .298$, therefore it could be inferred that men and women were similar in the number of mentally sick days. The one-way ANOVA for race/ethnicity indicated that the difference was statistically significant, $F(3, 147) = 5.437$, $p = .001$, which supports the inference that the different ethnic groups were not similar in the number of mentally sick days. The one-way ANOVA for SES indicated that the difference was not statistically significant, $F(8, 142) = .503$, $p = .853$, allowing the inference that the SES levels were similar in the number of mentally sick days. Finally, the difference for participants with/without children was not statistically significant, $F(1, 149) = 1.711$, $p = .193$, so it could be

inferred that participants with and without children groups were similar in the number of mentally sick days.

Table 8. One-way ANOVA for Mentally Sick Days variables *(N = 151)*

Race/Ethnicity

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2185.745	3	728.582	5.437	.001
Within Groups	19699.924	147	134.013		
Total	21885.669	150			

Gender

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	158.857	1	158.857	1.089	.298
Within Groups	21726.812	149	145.818		
Total	21885.669	150			

Socioeconomic status (SES)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	603.017	8	75.377	.503	.853
Within Groups	21282.652	142	149.878		
Total	21885.669	150			

Participants with and without children

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	248.532	1	248.532	1.711	.193
Within Groups	21637.137	149	145.216		
Total	21885.669	150			

Pearson correlation coefficients were computed for the continuous variables in Model 3 (Table 9). There was no significance for Model 3. In general, the results suggested that the number of mentally sick days was not associated with the independent variables.

Table 9. Pearson Correlations for Mentally Sick Days variables *(N = 151)*
Pearson Correlations for Mentally Sick Days

		Age	LOH	Social Support	No. of Mentally Sick Days
Age	Pearson Correlation	--			
	Sig. (2-tailed)				
	N	151			
LOH	Pearson Correlation	-.294**	--		
	Sig. (2-tailed)	.000			
	N	151	151		
Social Support	Pearson Correlation	.238**	-.002	--	
	Sig. (2-tailed)	.003	.978		
	N	150	150	150	
No. of Mentally Sick Days	Pearson Correlation	.009	.075	.124	--
	Sig. (2-tailed)	.912	.363	.130	
	N	151	151	150	151

Note: LOH is Length of Homelessness. **. Correlation is significant at the 0.01 level (2-tailed).

It was interesting to note that race/ethnicity was highly significant in the bivariate results of all models. Also, participants with and without children were significant in bivariate results for general health and physically sick days. In summary, the relationship between the two variables for all outcome and independent variables as discussed above showed the importance and likelihood of impact on the well-being of the homeless people.

Regression results

General Health. Ordinal logistic regression was used to analyze the data on the general health question (Model 1). The reference groups for the general health outcome were White females in families without children.

The Goodness of Fit test showed that the Pearson Chi-square statistic is not significant, which indicates that the model is a good fit (Table 10). The Nagelkerke pseudo R^2 is .612, that

is, 61.2% of variance in general health outcome is explained by the explanatory variables (Table 11). The Omnibus Test displayed in Table 12 showed that the model is significant.

Table 10. Goodness-of-Fit

Goodness of Fit[a]

	Value	Df	Value/df
Deviance	425.789	587	.725
Pearson Chi-Square	596.892	587	1.017
Akaike's Information Criterion (AIC)	451.789		

Dependent Variable: General Health
Model: (Threshold), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support
a. Information criteria are in smaller-is-better form.

Table 11. Pseudo R-Square

Pseudo R-square

Cox and Snell	.585
Nagelkerke	.612
McFadden	.284

Link function: Logit.

Table 12. Omnibus Test

Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
38.369	9	.000

Dependent Variable: General Health
Model: (Threshold), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support.
a. Compares the fitted model against the thresholds-only model.

The Table of Model Effects showed that age and the Length of Homelessness (LOH) were statistically significant for model 1 (Table 13).

Table 13. Tests of Model Effects for General Health
Tests of Model Effects

	Type III		
Source	Wald Chi-Square	Df	Sig.
Race/Ethnicity	5.485	3	.140
Gender	1.509	1	.219
SES	2.437	1	.119
Age	8.192	1	.004
Participants with/without children	2.341	1	.126
Length of Homelessness (LOH)	7.834	1	.005
Social Support	.587	1	.444

Dependent Variable: General Health
Model: (Threshold), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support

An ordinal logistic regression analysis was conducted to investigate the responses to: "Would you say that in general your health is: Excellent, Very Good, Good, Fair, or Poor?" (Table 14). The predictor variables were tested a priori to verify there were no violations of the assumption of no multicollinearity. The good health is significantly better than the poor health, (Exp(B) = 32.147, p = .002). The fair health is significantly better than poor health (Exp(B) = 159.981, p = .000).

Age was statistically significant in the model and was more likely to increase as general health increased (Exp(B) = 1.038, p = .004). The estimated odds ratio favored a positive relationship for every one unit increase in age, the general health level increased by 0.03% when other predictors were held constant.

The predictor variable, the Length of Homelessness (LOH), in the ordinal logistic regression analysis was found to contribute to the model. The Length of Homelessness (LOH) was likely to increase as general health increased (Exp(B) = 2.151, p = .005). The estimated odds

Table 14. Ordinal Logistic Regression Results of General Health

Parameter Estimates for General Health (N=151)

				95% Wald Confidence Interval		Hypothesis Test			95% Wald Confidence Interval for Exp(B)	
Parameter		B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Threshold	Excellent	.442	1.0738	-1.663	2.547	.169	1	.681	1.556	.190	12.763
	Very Good	2.027	1.0748	-.079	4.134	3.557	1	.059	7.593	.924	62.412
	Good	3.470	1.0978	1.319	5.622	9.992	1	.002*	32.147	3.738	276.464
	Fair	5.075	1.1443	2.832	7.318	19.670	1	.000*	159.981	16.984	1506.906
Native Hawaiians		.146	.4447	-.725	1.018	.108	1	.742	1.158	.484	2.767
Asians and Others		.012	.4147	-.801	.825	.001	1	.976	1.012	.449	2.282
Micronesians		-.976	.5379	-2.030	.079	3.290	1	.070	.377	.131	1.082
Whites		0[a]	.	.	.	.	.	.	1	.	.
Female		.403	.3280	-.240	1.046	1.509	1	.219	1.496	.787	2.845
Male		0[a]	.	.	.	.	.	.	1	.	.
Socioeconomic status		-.947	.6064	-2.135	.242	2.437	1	.119	.388	.118	1.274
Age		.038	.0131	.012	.063	8.192	1	.004*	1.038	1.012	1.065
Participants without children		.553	.3614	-.155	1.261	2.341	1	.126	1.738	.856	3.530
Participants with children		0[a]	.	.	.	.	.	.	1	.	.
Length of Homelessness		.766	.2736	.230	1.302	7.834	1	.005*	2.151	1.258	3.678
Social Support		.006	.0076	-.009	.021	.587	1	.444	1.006	.991	1.021
(Scale)		1[b]									

Dependent Variable: General Health *Note.* $*p < .05$ is significant, $n = 151$

Model: (Threshold), Race/Ethnicity, Gender, Socioeconomic status, Age, Participants with and without children, Length of Homelessness, Social Support.

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

ratio favored a positive relationship for every one unit increase of the Length of Homelessness (LOH), the general health level increased by 0.76% when other predictors were held constant.

Physically and Mentally Sick Days. Questions 2 and 3 had data that was widely dispersed (overdispersed) (Figures 2 and 3). So, negative binomial regression was used to analyze the results for the number of physically sick days and number of mentally sick days. Assumptions were tested to ensure that the conditional variance was greater than the conditional mean. The number of physically sick days and mentally sick days' variances were greater than their means.

Physically Sick Days. The second question was: "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?" The response asked for the number of days in a month, a continuous variable. Model 2 had data that was widely dispersed (overdispersed) as shown in Figure 2. So, negative binomial regression was used to analyze the data on the number of physically sick days.

There were 151 cases observed, with a mean of 8.06, and the standard deviation of 10.56. The minimum number of physically sick days was 0 and maximum days of 30. The Goodness of Fit of the model showed measures that were used to compare models (Table 15). AIC value was 923.157. The test of the model as a whole (Omnibus Test) was given (Table 16). The Likelihood Ratio Chi-Square provided a test of the overall model comparing this model to a model without any predictors (a "null" model). The model was a significant improvement over such a model by looking at the p-value of this test.

Table 15. Goodness of Fit

Goodness of Fit[a]

	Value	Df	Value/df
Deviance	312.264	140	2.230
Pearson Chi-Square	270.142	140	1.930
Akaike's Information Criterion(AIC)	923.157		

Dependent Variable: Number of Physically Sick Days
Model:(Intercept), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support. a. Information criteria are in smaller-is-better form.

Table 16. Omnibus Test

Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
40.802	9	.000

Dependent Variable: Number of Physically Sick Days
Model: (Intercept), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support
a. Compares the fitted model against the intercept-only model.

In the Tests of Model Effects table, race/ethnicity and social support were statistically significant (Table 17). The table included the three degrees of freedom test of race/ethnicity, which indicated that as a whole, the variable race/ethnicity was a significant predictor of the number of physically sick days.

Table 17. Test of Model Effects for Physically Sick Days
Tests of Model Effects

	Type III		
Source	Wald Chi-Square	Df	Sig.
(Intercept)	.955	1	.328
Race/Ethnicity	13.352	3	.004
Gender	1.421	1	.233
SES	3.460	1	.063
Age	1.237	1	.266
With/without children	.233	1	.629
Length of Homelessness (LOH)	2.236	1	.135
Social Support	6.476	1	.011

Dependent Variable: No. of Physically Sick Days
Model: (Threshold), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support

The negative binomial regression results for the number of physically sick days are given (Table 18). The Micronesians were more likely to have lower number of physically sick days than Whites (Exp(B) = .496, p = .034). Compared to Whites, the expected log count for Micronesians decreased by 0.70. This meant that the White population was predicted to have poorer physical health status than the Micronesians.

The variable, social support had a coefficient of 0.011, which was statistically significant. As social support increased, the number of physically sick days increased (Exp(B) = 1.011, p = .011). This meant that for each unit increase on social support, the expected log count of the number of physically sick days increased by 0.01 day.

Table 18. Negative Binomial Regression Results of Physically Sick Days

Parameter Estimates for Physically Sick Days (N=151)

			95% Wald Confidence Interval		Hypothesis Test			95% Wald Confidence Interval for Exp(B)	
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	Df	Sig.	Exp(B)	Lower	Upper
(Intercept)	.504	.6826	-.834	1.842	.545	1	.460	1.655	.434	6.307
Native Hawaiians	.321	.2719	-.212	.854	1.393	1	.238	1.378	.809	2.348
Asians and Others	.132	.2532	-.364	.628	.271	1	.603	1.141	.695	1.874
Micronesians	-.701	.3309	-1.349	-.052	4.483	1	.034*	.496	.259	.949
Whites	0[a]	.	.	.	.	.	.	1	.	.
Female	.229	.1919	-.147	.605	1.421	1	.233	1.257	.863	1.831
Male	0[a]	.	.	.	.	.	.	1	.	.
Socioeconomic status	-.754	.4056	-1.549	.041	3.460	1	.063	.470	.212	1.041
Age	.009	.0085	-.007	.026	1.237	1	.266	1.009	.993	1.026
Participants without children	.108	.2238	-.331	.547	.233	1	.629	1.114	.718	1.727
Participants with children	0[a]	.	.	.	.	.	.	1	.	.
Length of Homelessness	.257	.1718	-.080	.594	2.236	1	.135	1.293	.923	1.810
Social Support	.011	.0044	.003	.020	6.476	1	.011*	1.011	1.003	1.020
(Scale)	1[b]									
(Negative binomial)	1[b]									

Dependent Variable: Number of Physically Sick Days *Note.* *$p < .05$ is significant, $n = 151$.

Model: (Intercept), Race/Ethnicity, Gender, Socioeconomic status, Age, Participants with and without children, Length of homelessness, Social Support.

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

Mentally Sick Days. The third question was: "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" The response asked was the number of days in a month and seen as a continuous variable. The number of mentally sick days' data was widely dispersed (overdispersed) (Figure 11). Negative binomial regression was used to analyze the data on the number of mentally sick days. The conditional variance was 145.904 and greater than the conditional mean (10.52). Thus, assumption was tested to utilize negative binomial regression for this model.

The Goodness of Fit of the model showed measures that were used to compare models (Table 19). AIC value was 1000.82. The test of the model as a whole (Omnibus Test) was given (Table 20). The Likelihood Ratio Chi-Square provided a test of the overall model comparing this model to a model without any predictors (a "null" model). The model was a significant improvement over such a model by looking at the p-value of this test.

Table 19. Goodness of Fit

Goodness of Fit[a]

	Value	Df	Value/df
Deviance	343.621	140	2.454
Pearson Chi-Square	238.850	140	1.635
Akaike's Information Criterion (AIC)	1000.826		

Dependent Variable: Number of Mentally Sick Days
Model: (Intercept), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support
a. Information criteria are in smaller-is-better form.

Table 20. Omnibus Test for Mentally Sick Days

Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
35.514	9	.000

Dependent Variable: Number of Mentally Sick Days
Model:(Intercept), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support
a. Compares the fitted model against the intercept-only model.

In the Tests of Model Effects table, race/ethnicity was statistically significant (Table 21). The table included the three degrees of freedom test of race/ethnicity, which indicated that as a whole, the variable race/ethnicity was a significant predictor of the number of mentally sick days. The variables, gender and Length of Homelessness (LOH), were also possible predictors of the number of mentally sick days.

Table 21. Test of Model Effects for Mentally Sick Days

Tests of Model Effects

	Type III		
Source	Wald Chi-Square	Df	Sig.
(Intercept)	7.387	1	.007
Race/Ethnicity	28.252	3	.000
Gender	3.773	1	.052
SES	1.012	1	.314
Age	.550	1	.458
Participants with/without children	.064	1	.801
Length of Homelessness	3.668	1	.055
Social Support	3.465	1	.063

Dependent Variable: Number of Mentally Sick Days
Model: (Intercept), Race/Ethnicity, Gender, SES, Age, Participants with/without children, Length of Homelessness, Social Support

The table Parameter Estimates contained the negative binomial regression coefficients for each of the predictor variables along with their standard errors, Wald Chi-Square values, p-

values, and 95% confidence intervals for the coefficients (Table 22). The intercept of the model was statistically significant. The Micronesians were likely to have a lower number of mentally sick days than the Whites (Exp(B) = .296, p = .000). Compared to the Whites, the expected log count for the Micronesians decreased by 1.21. Also, women were more likely to have a higher number of mentally sick days than men (Exp(B) = 1.438, p = .052). Compared to men, the expected log count for women increased by 0.36.

Lastly, the Length of Homelessness (LOH) had a coefficient of 0.305, which was statistically significant. As Length of Homelessness (LOH) increased, the number of mentally sick days increased (Exp(B)= 1.357, p= .055). This meant that for each unit increase on Length of Homelessness (LOH), the expected log count of the number of mentally sick days increased by 0.30 day.

Table 22. Negative Binomial Regression Results of Mentally Sick Days

Parameter Estimates for Mentally Sick Days (N=151)

			95% Wald Confidence Interval		Hypothesis Test			95% Wald Confidence Interval for Exp(B)		
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	Df	Sig.	Exp(B)	Lower	Upper
(Intercept)	1.735	.6462	.468	3.002	7.209	1	.007*	5.669	1.598	20.118
Native Hawaiians	.186	.2610	-.326	.697	.506	1	.477	1.204	.722	2.008
Asians and Others	.081	.2452	-.400	.561	.108	1	.742	1.084	.670	1.753
Micronesians	-1.219	.3079	-1.822	-.615	15.668	1	.000*	.296	.162	.540
Whites	0[a]	.	.	.	.	.	.	1	.	.
Female	.363	.1868	-.003	.729	3.773	1	.052*	1.438	.997	2.073
Male	0[a]	.	.	.	.	.	.	1	.	.
Socioeconomic status	-.369	.3670	-1.089	.350	1.012	1	.314	.691	.337	1.419
Age	-.006	.0086	-.023	.010	.550	1	.458	.994	.977	1.011
Participants without children	-.054	.2142	-.474	.366	.064	1	.801	.947	.623	1.442
Participants with children	0[a]	.	.	.	.	.	.	1	.	.
Length of Homelessness	.305	.1594	-.007	.618	3.668	1	.055*	1.357	.993	1.854
Social Support	.008	.0042	.000	.016	3.465	1	.063	1.008	1.000	1.016
(Scale)	1[b]									
(Negative binomial)	1[b]									

Dependent Variable: Number of Mentally Sick Days *Note.* $*p < .05$ is significant, $n = 151$.

Model: (Intercept), Race/Ethnicity, Gender, Socioeconomic status, Age, Participants with and without children, Length of homelessness, Social Support.

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

Chapter 5. Discussion

This chapter will discuss the research findings, with some interpretation of their meaning. Some additional studies are presented which are relevant for understanding the results. This research has implications for working with members of the homeless community in a better manner. Some recommendations for future research, along with the limitations of this project also appear here. First, this discussion turns to the research results and understanding them.

Findings and Interpretations

This study explored the importance of race/ethnicity, gender, class (SES), age, participants with and without children, Length of Homelessness (LOH), and the availability of social support on the perceived health status of the sheltered participants. It had been anticipated that all of these demographic variables might be significant in the analyses based on the literature review results.

Race and ethnicity seem to have a strong impact on the perceived health status of the homeless participants. The results from the two models (Models 2 and 3) show that the Micronesians were found to have better physical and mental health status than the Whites. The Micronesian research participants are more likely to have lower scores in numbers of physically and mentally sick days than their White counterparts. Low scores are also signs of better health for the physically and mentally sick days. This means that the Micronesian shelter clients have

better physical and mental health, using several different measurements, compared to the White clients. This is likely a reflection of the data showing that homeless Whites are the largest ethnic group living in poverty, and they are less likely to have regular incomes, access to health care, or nutritious meals. As a result, they report poorer perceived physical and mental health status than the Micronesians.

The literature review showed that homeless people have high barriers to health care access generally but use acute care services at high rates (Kushel, Vittinghoof, & Haas, 2001; Kushel, *et. al*, 2002; Martinez & Burt, 2006). Given the combination of the study data with information from other researchers, it seems likely that in the long run if their poor health status goes unattended, the homeless White participants are likely to utilize the emergency rooms frequently.

Other aspects of ethnicity are also highlighted in this study. In Hawai`i, White and Japanese American residents hold higher occupational status. This is ensured by the overrepresentation of men in management/business, sales, and office work; and by the high levels of White women in the professions (Okamura, 1998c). Given these trends, it is difficult to explain why economically deprived Whites are present in high numbers in the homeless population. One way to make sense of these circumstances may be to investigate whether the homeless White participants are from the U. S. 'mainland', rather than local people of Hawai`i. Certainly, some reports do support this suggestion. Pen (2015) states that mainland "people arrive with no job, nowhere to live and no means of support, hoping instead to live off the dole in a place where it is less likely to track whatever problems may have led them to Hawai`i, especially those whose on-the-street living has been recent and residency but a few weeks or months." A. Blair (2016) also reports that "in the past 18 months, the Institute for Human

Service (IHS) has moved 388 homeless back to the mainland through its airline relocation program, which only enrolls clients who have support systems in their home states and requires participants to pay for half of their tickets. But as quickly as IHS can send homeless back to the mainland, more take their places. Over the past year, 302 people from the mainland ended up at IHS, sometimes within days of getting off the plane. That number is up 30 percent from the same time last year." These newspaper reports suggest that some of the homeless participants interviewed in this study may come from the U. S. mainland rather than the Hawaiian isles.

Next, gender is significant in one of the three models (Model 3). The women in shelters are likely to have more mentally sick days than the sheltered men. This means they have poorer mental health status than men. It is an important research area to consider, given the stories of female homeless participants, who experienced pain and trauma due to violent domestic situations (Francis, 1992; Lindsey, 1997; Menke & Wagner, 1997; Montgomery, 1994; Styron, 1997). They fled from homes with their children, and ended up living in the streets, couch-surfing and/or in double-up living situations (Choi & Snyder, 1999a).

SES was not significant in any of the three models. However, three-quarters of the sheltered participants live in poverty with no regular income and lack of nutritious meals. These participants are more likely in using the emergency rooms when taken ill.

In addition to the factors of race/ethnicity and gender proving significant in this study, the general health findings show that age is an important predictor in this model. When the age of the participants increases, the general health scores also increase, which indicates poorer general health status. This means that the older the participants, the poorer their general health status. This finding is a concern, as one-fourth of the participants are in their late 50s and above. With an older age and no/low income, many of them are likely to have medical issues that need

the attention of case managers and housing providers. Rosenheck, Bassuk, and Salomon (2001) report “older homeless adults experience a variety of health and mental health problems, but they lack access to care because they have little or no money, does not have reliable transportation, and are regularly unable to pay for medications. In addition, many elderly, homeless adults have cognitive impairments that are exacerbated by the stress and anxiety of homelessness.” This dilemma could be addressed with early interventions, such as assessing the health needs of older participants, and providing care, while they are staying at shelters. An assessment of their physical and mental functioning on a regular basis could be a good start. Permanent housing without resident managers would be a good option for those who are able to manage their health care on their own. However, this would not work well for those who are frail and weak and need housing that has residential staff. For these clients, facilities should include fall prevention walkways, ramps, grab bars in bathroom and toilets, and easy access to hospitals/clinics for medical emergencies.

The participants with and without children category is added to assess the social support received from the participants’ children. Additionally, there are more participants with children than without children. Though the regression results did not show any significance of the absence/presence of children living with the participants, bivariate results of general health and the number of physically sick days showed significance of the participants with and without children. This meant that there is a likely chance of significant relationship between health statuses and the participants with and without children.

In this research, the negative event is the Length of Homelessness (LOH), which the participants experience. The other socially undesirable events are living in crowded homeless shelters. There is no privacy, and many people complain of bed bugs in the facilities, which

cause sleepless nights. Two of the four shelters' participants mentioned that the residents have to leave the shelters in the mornings after breakfast and return in the evenings for dinner. If they experience sleepless nights due to the bed bug issues, then there are few places available where they can rest and nap during the daytime. The daily hassles of looking for places to rest/nap can be stressful and contribute to the poor health of homeless individuals and families. Pile-ups of stressors also produce elevated levels of psychological distress, and they also predict the onset, or recurrences of psychiatric disorders, such as generalized anxiety disorder, major depression, post-traumatic stress disorder, and alcohol and substance use disorders (Brown & Harris 1978; Dohrenwend & Dohrenwend 1974; Mirowsky & Ross 2003; Thoits 1983, 1995). Thus, the Length of Homelessness (LOH) turns out to be a significant predictor in the general and mental health models. As the Length of Homelessness (LOH) of the participants increases, the general health scores and the number of mentally sick days increase too, which indicates poorer general health and mental health statuses. Therefore, the longer the participants are in homeless situations, the poorer their general health and mental health statuses.

Another major contribution of this study is the social support findings. Though the bulk of the academic literature shows that social support is assumed to eliminate or reduce health problems, the findings in this study do not fit with this assumption. Instead, social support has a negative effect on the physical health status of these participants. As shown in model 2, when the social support scores increase, the number of physically sick days increase, too. These findings imply that though there is social support available, physical health is likely to be poorer for the participants.

Why is this so? A growing body of evidence suggests that there can be a negative side to social interactions with friends and relatives that may be deleterious to the well-being of an

individual or a family unit (Belle, 1983; Rook, 1984). For a start, Thoits (1995) raises the question as to who "marshals support – the stressed person or his/her significant others. When the stressor is an acute life event, are significant others more likely to intervene without the individual having to ask? Does the utility of support depend on whether the individual has had to solicit assistance or had it offered spontaneously? Does the individual's level of distress or illness influence the amount of support he/she receives?"

Despite the positive connotations of the concepts of "social integration" and "social support," our social ties are not always positive influences in our lives, and thus, on our well-being (Rook, 1992). Some evidence indicates that obligatory social ties (e.g., spouse, parent, relative, worker) can produce stressful demands, which may cancel or outweigh the consequences of positive roles of self-esteem, competence, or identity (Berbrier & Schulte, 1993; Gove, Style, & Hughes, 1990; Moen, Dempster-McClain, & Williams, 1989; Rook, 1992; Thoits, 1992; Umberson & Gove, 1989).

Even when social support is available, the participants' traumatic personal experiences, social roles, and responsibilities may still have a negative effect on them. Several male and female participants shared stories about fleeing their homes due to domestic violence or unsafe living situations, blaming ex-spouses or significant others. Many of them resorted to "couch surfing," or double-up situations, before gaining admission to a shelter. As reported by NNEDV (n.d), women's experience of domestic violence is an "immediate cause of homelessness." Over 85% of survivors entering shelters identified "safety for myself," followed by "finding housing I can afford" as reasons. The risk of suffering from six or more chronic symptoms increased with the number of forms of violence experienced (Nicolaidis *et al* 2004).

Past studies had pointed that women have fewer social support than men. However, it was not the case in this study. There were no significant differences in the social support received by both men and women. A separate analysis was not conducted due to multicollinearity issue with other IVs.

In addition to suffering from stressful past circumstances, many of the homeless adults also experience stress currently. Many of them live with their children in crowded, confined shelter spaces, with little or no privacy. The uncomfortable living conditions add complexity to the hectic social roles that they play as spouses, partners, and/or parents. Thoits (1995) adds that very little is known about what support-givers actually do to encourage or sustain health-related changes. A focus on caregiver stress in the literature indicates that giving extended and extensive support indeed is physically and emotionally draining (e.g. Aneshensel, Pearlin, & Schuler, 1993). Some studies indicated that perceived social support leads to support-seeking, which in turn is associated with high depression or distress (Coyne & Downey, 1991; Pearlin & Schooler, 1978; Ross & Mirowsky, 1989). Thus, the findings of this study reiterated the fact that there are important limitations to the theory that social support benefits the perceived health status of people.

There are slightly more male participants than female participants in this study. This information reflects the same gender pattern found in the Hawai`i Homeless Utilization Report: FY 2017 (Yuan & Gauci, 2017) with more homeless men in Oahu's shelters than homeless women. The mean age of the participants is mid-40s, which closely relates to the majority of people in Oahu's shelters belonging to the 40 to 59 years category (Yuan & Gauci, 2017).

The largest ethnic group represented is Native Hawaiians, followed by Whites and Micronesians. The "Asian and Others" category is a combination of less-represented ethnic

minorities and Asian populations. This ethnic breakdown matches to some extent that of the Hawai`i Homeless Utilization Report: FY 2016, which shows Native Hawaiians as the largest homeless group, followed by the White population.

This study showed that race/ethnicity, gender, and age, which are sociodemographic factors, as well as the Length of Homelessness (LOH) and social support have influential power in determining the perceived health status of the homeless participants. However, the findings on social support resource, which is expected to improve the perceived health status of participants reveal that it, is more likely to worsen the physical health status. Though Micronesians speak different languages, they share similar cultures and values. They have similar reasons for migrating. Many left their homes to find better lives for themselves and their families in Hawai`i.

Also, there are some things to consider in this study. Though the alpha coefficient of tangible social support subscale was relatively lower than the other subscales' alpha coefficients, it was still included in the total score. So, when interpreting the results of social support, the findings should be interpreted with caution.

Also, it must be noted that the physically sick days variable and mentally sick days variable are correlated and cannot be considered independently from one another. Thus, the regression models for 2 and 3 are not independent from one another. This is one of the limitations of the study and will be discussed further.

This research only collected data from a functional measure and analyzed its total social support scores and was not able to analyze tangible, appraisal, self-esteem, and sense of belonging scores. The sub-set scores will be able to give a clear picture of the type of social support received by the participants. It would be useful to conduct research on the sheltered,

homeless people and investigate the types of social support received and assist them in coping the stressful living conditions.

Most studies report that ethnic minorities, in general, indicate poorer health status than the White population. In this research, this is not the case. The findings indicate that Whites are predicted to have higher number of physically and mentally sick days on a daily basis. The homeless, White participants are also facing socially undesirable or negative events, which are strongly associated with poor physical and mental health.

Recommendations

Based on the findings of this study, it is possible to provide recommendations to improve the health status of Oahu sheltered residents. The findings and recommendations would be pertinent to shelter management, social workers, policy makers, and housing providers. The recommendations follow below.

Access to health care. Many homeless people do not have health insurance. There are not financially stable enough to pay for regular medical attention. As a result, many turn to emergency rooms, which are extremely costly, and ultimately a drain on scarce health dollars. According to Bussewitz (2017), the Queens' Health System, a Honolulu hospital was billed $80 million for treating homeless people in 2014, and $89 million in 2015. Also, more than $10 million goes uncompensated annually. Addressing this issue, the Affordable Care Act of 2010 created the opportunity for states to expand Medicaid to cover nearly all low-income Americans under age 65 (Medicaid, 2017). Every effort should be made to enroll low-income homeless individuals in Medicaid, which will provide consistent health coverage and treat their ongoing health problems. This approach will likely reduce spending on hospitalization and health costs with savings on uncompensated care.

Eliminating poor structural circumstances. Though a few case managers did talk about employment opportunities, many participants felt that there was no guidance or direction given by the shelter staff. The Hawai`i Legislature and homeless shelters' management teams should prioritize social policies which focus on helping the homeless find employment, education, and affordable housing. These programs might also include promoting problem-solving and identifying coping skills to address poverty, discrimination, and social segregation. Hawai`i leaders might explore other states' strategies for reducing social inequalities for the homeless. There are more than a dozen states, including California, Louisiana, New York, and Texas, which have found alternative ways to use Medicaid money for social services to help people stay in housing, such as employment services, or counseling (Bussewitz, 2017). In Hawaii, this could be one of many strategies to improve the SES of homeless people.

Share knowledge on psychosocial programs. Shelter providers could share knowledge and skills that work well with their residents. This could include social support interventions that best buffer the effects of stress on a daily basis. Staff or volunteers could teach money management skills to save money for rental deposits for apartments, how to shop carefully, and how to cook low-budget meals. They could also create peer support groups to help families with child care, so parents can work, or to provide counseling, transportation, or other assistance.

Referral to domestic violence shelters. For victims of domestic violence, services must be well-coordinated between shelter staff and non-profit organizations specializing in domestic violence programs. Some of the successful programs on Oahu are the Domestic Violence Action Center (DVAC), Parents and Children Together (PACT), and Child and Family

Services Shelters. Also, educational programs on relationship and parenting should be conducted to increase the awareness and prevention of domestic violence. Transitional housing programs are viable responses to the needs of this population. They typically provide supportive services and affordable housing for up to eighteen months, an arrangement that can be very effective in assisting homeless families that have experienced domestic violence in achieving emotional, physical, and financial stability ("Domestic Violence and Homelessness," n.d., para. 18).

Housing First program/affordable housing. The Housing First program started two years ago in Hawai`i. Reports are that the program is successful, and has maintained a 97% retention rate in its first year. Nakaso (2016) reported that "Housing First funded units for 176 people, representing 115 households, last year. The preliminary results of the University of Hawai`i study showed that compared to when they were homeless, Housing First participants reported having more days in which they felt better, had more energy and were more active. They reported having fewer stressful days and experienced more days when they were generally satisfied with life and had hope for the future". It appears that the program is working well and the state officials need to allocate continued funding to provide housing for more homeless people.

The other housing options are affordable housing, public housing, and homeless shelters. Hawai`i has a history of lagging in the delivery of affordable homes due to high construction costs and the state's budgetary challenges. In January 2017, it was reported that "20 state senators proposed issuing $2 billion in state-backed bonds to build affordable housing, public housing renovations and homeless shelters" ("Hawaii pols propose bill", 2017). This proposal provides hope to many homeless people, and perhaps, they could be helped with cheaper housing units, or shelters, until permanent housing becomes available.

Cultural Differences. Culture is the beliefs, values, and lifestyles of the community. Generally, the culture of the United States, whose political, philosophical, and social underpinnings were founded on liberalism, is individualistic (Kim, 1994). However, Hawai`i is culturally different from the rest of the United States, both historically and currently. Hawai`i lies midway between Asia and North America, and its culture reflects both individualistic and collectivistic influences. About 62% of the state is Asian (Almapi, 1994), and Asian cultures tend to be quite collectivist (Hofstede, 1980; Triandis, 1994). Pacific Islands peoples, such as Micronesians tend to value collectivism and interdependence (Sadao, 2000). Marshallese place great value in interdependency based on "sharing" and "supporting" among extended family members (Choi, 2006). Specific social support interventions (e.g. communal support, individual counseling, etc.) could be provided that suits the needs of the various ethnic groups in the shelters. Similar cultural values are seen in Native Hawaiians' lifestyle. Researchers (Braun et al. 2004; Mokuau & Braun, 2007) pointed out that the influence of culture and the role of Hawaiian cultural values on health promotion and caregiving when working on Native Hawaiians' health profile. These values include collective affiliation and interdependence of the individual, family, community, environment, and transcendent realms. A Native Hawaiian core cultural value, similar to Native American values, speaks to the transcendent— the central role of spirituality and balance for health and wellness that surpasses what we see and know in the material world.

Now that some recommendations from the findings have been presented, it is important to consider how future research might expand on this study in a useful manner. This is the focus of the next section.

Implications for Future Research

Future research could concentrate on the type of social support resources that work well for Micronesians. Investigations might also focus on the frequency of support, and how it is provided to see if there was an effect on health status. Prior research has indicated that asking for social support from others might be stressful than receiving it. How often do they have to seek it? Who is seeking social support – is it for themselves, spouses/significant others, or children? In addition, it is important to recognize that the strategies effective with Micronesians may or may not work for the White population. At least collecting more details on the social support networks would be helpful in tailoring programs to groups, or perhaps individual needs, which might improve well-being.

New research could also look at the individualism and collectivism dimensions of the homeless people. Hawai`i has various ethnic communities that believe in both dimensions. It would be useful to study the cultural differences of the homeless people and the relationship with social support and health status.

Not only would it be interesting to know why social support has different effects on different cultural groups, it would also be interesting to explore these factors in a more complicated manner. This study only examined the impact of sociodemographics, Length of Homelessness (LOH) and social support on the perceived health status of the sheltered homeless population. New research might investigate the interaction effects of social support and race/ethnicity, and study the outcomes. New findings might reveal significant relationships between these variables, and their impact on perceived health status. Based on the findings, new recommendations might result, which would improve health outcomes.

Not only could analyses be conducted differently, which might provide new insights, but

also entirely different types of research might be conducted with the Oahu homeless community. Researcher could conduct food surveys with the donors to assess the types of food provided to the homeless. Shelter residents are fed donated meals, provided by non-profit entities, churches, food banks, and pantries. Whether their meals are balanced, nutritious, and healthy was not determined in this study. New recommendations could be made to improve the quality of meals. For example, the possibility of serving more fresh vegetables and meat products, rather than canned food, sodas, and sweetened beverages, which have unhealthy levels of sodium, sugar, and preservatives.

Given the high numbers of elderly homeless individuals identified in this research and other studies, it would be useful to conduct a comparative study of semi-independent (with residential support) and independent (without residential support) homeless geriatric residents, including their health status. It is evident that aging homeless participants will suffer deteriorating health status, typically including chronic illness at some point in the future.

This study dealt with homeless people who were receiving help with housing, but future research could focus on the unsheltered homeless of Oahu. Many sheltered participants described being homeless for several years before moving to a shelter. Unsheltered homeless people are at higher risk for sexual assault, robberies, domestic violence, and other forms of victimization, so more information about their health and well-being would be useful. There would be great challenges in conducting research with this group, but perhaps, people could be reaching through the outreach programs, which offer financial and housing services.

Limitations

There were several limitations to this study. Firstly, it had a relatively small sample size

and did not measure the types of illnesses experienced by the sheltered participants. Though the Health Days Core (HDC) survey had questions on the number of physically and mentally sick days, it did not specifically cover the types of physical and/or mental health illnesses (e.g. diabetes, heart problems, depression, and others). It would have given more details about the health status of the participants.

Secondly, this study's reliance was only on quantitative methods. It focused on quantitative health outcomes, and did not include qualitative aspects, such as the narratives and stories of the sheltered participants and their journeys to homelessness. During the survey, some participants did share stories about their lives. Some spoke about losing their homes due to domestic violence, while others described immigrating to Hawaii, search for employment, housing, and educational opportunities. Many of these accounts emphasized their stressful living conditions.

Thirdly, this research only sampled sheltered participants rather than all homeless individuals. There are many more unsheltered homeless people living in abandoned buildings, streets, beaches and under Oahu's freeways. It is important to investigate the health status of these individuals.

In addition, this study utilized only a functional social support measure, and did not use a structural social support measure, which would have given information on the size and frequency of social support networks. Homeless veterans, and the transgendered population were not included this study. Future research using larger and more representative samples, along with a comparative research design would capture information about unsheltered homeless people, transgendered persons, veterans, and the differences between urban and rural shelters. Also, the

health survey could have included questions on the types of illnesses and diseases that challenged the participants, and whether they had medical coverage.

Another limitation to the research is that it didn't ask about substance use, although homeless people are known to experience an increased risk for using multiple substances, including tobacco, alcohol, and illicit drugs.

Conclusion

This research explored the impact of race/ethnicity, gender, SES, age, participants with and without children, the Length of Homelessness (LOH) and social support on the perceived health status of Oahu's homeless people. The results showed that race/ethnicity, gender, age, the Length of Homelessness (LOH), and social support played significant roles in determining the perceived health status of homeless, sheltered people in Oahu.

Due to the unique sociodemographic composition, all ethnic groups in Hawai`i were considered minorities. Generally, in the Pacific region, researchers have focused on the well-being of ethnic minorities, such as Native Hawaiians, and Other Pacific Islanders. Many past and contemporary studies document widespread health problems for these groups. This study was different, since it found that many Whites perceived their health status to be extremely negative. This is an important finding. Thus, future research could focus on identifying the mechanisms and processes, which affects homeless, low-income White people, and develop social support and psycho-rehabilitation programs. These programs might include social skills training, supported employment, leisure and wellness, goal setting, positive social support system, education, housing assistance, and peer support groups. Some shelters may already have some of these offerings. A holistic, multi-pronged approach will be required to alleviate the health issues of homeless people. This research has shown that race/ethnicity, gender, age, the Length of

Homelessness (LOH), and social support does have impacts on the perceived health status of sheltered residents.

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Appendix A

Office of Research Compliance
Human Studies Program

UNIVERSITY of HAWAI'I® SYSTEM

MEMORANDUM
CR

August 4, 2017

TO: Vijaya Perumal
Principal Investigator
School of Social Work

FROM: Victoria Rivera
Interim Director

SUBJECT: CHS #22524- "Gender, Social Support, and Perceived Health Status Amongst Oahu's Homeless"

Under an expedited review procedure, the research project identified above was approved for one year on August 3, 2017 by the University of Hawaii (UH) Human Studies Program. The application qualified for expedited review under CFR 46.110 and 21 CFR 56.110, Category (8c).

This memorandum is your record of the Human Studies Program approval of this study. Please maintain it with your study records.

The Human Studies Program approval for this project will expire on August 2, 2018. If you expect your project to continue beyond this date, you must submit an application for renewal of this Human Studies Program approval. The Human Studies Program approval must be maintained for the entire term of your project.

If, during the course of your project, you intend to make changes to this study, you must obtain approval from the Human Studies Program prior to implementing any changes. If an Unanticipated Problem occurs during the course of the study, you must notify the Human Studies Program within 24 hours of knowledge of the problem. A formal report must be submitted to the Human Studies Program within 10 days. The definition of "Unanticipated Problem" may be found at: https://www.hawaii.edu/researchcompliance/policies-guidance and the report form may be downloaded here: https://www.hawaii.edu/researchcompliance/report-protocol-violation-or-unanticipated-problem.

You are required to maintain complete records pertaining to the use of humans as participants in your research. This includes all information or materials conveyed to and received from participants as well as signed consent forms, data, analyses, and results. These records must be maintained for at least three years following project completion or termination, and they are subject to inspection and review by the Human Studies Program and other authorized agencies.

2425 Campus Road, Sinclair 10
Honolulu, Hawai'i 96822
Telephone: (808) 956-5007 • Fax: (808) 956-9150

Please notify this office when your project is complete. Upon notification, we will close our files pertaining to your project. Reactivation of the Human Studies Program approval will require a new Human Studies Program application.

Please contact this office if you have any questions or require assistance. We appreciate your cooperation, and wish you success with your research.

Appendix B

Healthy Days Core (HDC) Survey:

1. Would you say that in general your health is:

a. Excellent	1
b. Very good	2
c. Good	3
d. Fair	4
e. Poor	5
Don't know/Not sure	7
Refused	9

2. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

a. Number of Days	_ _
b. None	8 8
Don't know/Not sure	7 7
Refused	9 9

3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days were your mental health not good?

a. Number of Days	_ _
b. None	8 8

If both Q2 and Q3 = "none", skip next question

Don't know/Not sure	7 7
Refused	9 9

4. During the past 30 days, for about how many days did poor physical or mental health keeps you from doing your usual activities, such as self-care, work, or recreation?

a. Number of Days	_ _
b. None	8 8
Don't know/Not sure	7 7
Refused	9 9

Appendix C

Interpersonal Support Evaluation List (ISEL)

1. There are several people that I trust to help solve my problems.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

3. Most of my friends are more interesting than I am.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

4. There is someone who takes pride in my accomplishments.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

5. When I feel lonely, there are several people I can talk to.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

6. There is no one that I feel comfortable to talking about intimate personal problems.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

7. I often meet or talk with family or friends.

   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

8. Most people I know think highly of me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

10. I feel like I am not always included by my circle of friends.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

11. There really is no one who can give me an objective view of how I'm handling my problems.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

12. There are several different people I enjoy spending time with.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

13. I think that my friends feel that I'm not very good at helping them solve their problems.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put me up.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

17. I feel that there is no one I can share my most private worries and fears with.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

18. If I were sick, I could easily find someone to help me with my daily chores.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

19. There is someone I can turn to for advice about handling problems with my family.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

20. I am as good at doing things as most other people are.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

23. If I needed an emergency loan of $100, there is someone (friend, relative, or acquaintance) I could get it from.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

24. In general, people do not have much confidence in me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

25. Most people I know do not enjoy the same things that I do.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

25. There is someone I could turn to for advice about making career plans or changing my job.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

27. I don't often get invited to do things with others.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

28. Most of my friends are more successful at making changes in their lives than I am.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

29. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

30. There really is no one I can trust to give me good financial advice.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

31. If I wanted to have lunch with someone, I could easily find someone to join me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

32. I am more satisfied with my life than most people are with theirs.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

33. If I was stranded 10 miles from home, there is someone I could call who would come and get me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

34. No one I know would throw a birthday party for me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

35. It would me difficult to find someone who would lend me their car for a few hours.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

37. I am closer to my friends than most other people are to theirs.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

38. There is at least one person I know whose advice I really trust.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

40. I have a hard time keeping pace with my friends.

____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

Appendix D

Length of Homelessness (LOH) Survey:

What is the length of homelessness?

Response: _____(months)

Appendix E

Sociodemographic Form (SF)

1) Gender:
a) Male b) Female

2) Age:_____

3) Race/Ethnicity:
a) Caucasian b) Hawaiian/part Hawaiian c) Micronesian d) Asian e) Others
f) Unknown

4) Employment:
a) Unemployed b) Employed (PT) c) Employed (FT) d) Unknown

5) Income:_____

6) Education:
a) Less than HS b) HS Diploma c) Some college or more d) Unknown

7) Participants:
a) with children b) without children